CPAC PROJECT BINDER

Moloka`i Community Plan Update

Planning Department Draft

Prepared for:
Community Plan Advisory Committee (CPAC)

County of Maui - Department of Planning
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1 | INTRODUCTION

Moloka`i is an island tremendously rich in natural and cultural resources. Its physical geography makes it one of the most striking places in the world to live and visit and its bountiful agricultural lands are among the most fertile in the State. Moloka`i is famous for having the highest sea cliffs in the word, the most intact pre-contact system of man-made fishponds that exist anywhere in Polynesia, the longest contiguous reef system in the United States, and it is purported in the oral tradition to be the birthplace of the Hawaiian Hula.

Moloka`i is often referred to as the "last Hawaiian Island". It is the most rural of the Hawaiian Islands and has the highest percentage of native Hawaiians in the State. Many Moloka`i residents still practice a subsistence based lifestyle, relying on fishing, hunting, and gathering for food and spiritual wellbeing. There is a strong sense of `ohana on Moloka`i. Large extended families are common and sharing resources is customary. For many Moloka`i residents maintaining close ties to the ocean, land, and ancestral places fosters a sense of place and connectedness to past, present, and future generations.

Many Moloka`i families have lived on the island for generations, while some are more recent arrivals. Key events have shaped the structure and vitality of Moloka`i's economy and land use and in turn have influenced the population makeup and employment of the island. Today, the people, brought together from many different cultures, share common values – a love for `ohana, the land and sea, and the rural lifestyle. The tightly-knit community is mutually supportive, has an array of expertise and background, and a strong desire to be self-reliant and sustainable.

But in spite of these great strengths, Moloka`i has historically had a delicate economy due to the island's remote location, small population base, and strong control by a few major landowners. Some Moloka`i residents are very protective of their rural and traditional-based lifestyles, and have resisted economic development centered on tourism and real estate. Establishing a more vibrant job producing economy in harmony with Moloka`i's rural lifestyle, and cultural and environmental resources will necessitate more creativity, harder work, and a greater spirit of entrepreneurialism than required for other economies with greater competitive advantages. Moloka`i's natural environment, cultural resources, and agricultural lands are key assets that, if properly managed and protected, will help to strengthen and diversify the island's economy and ensure opportunities for future generations.

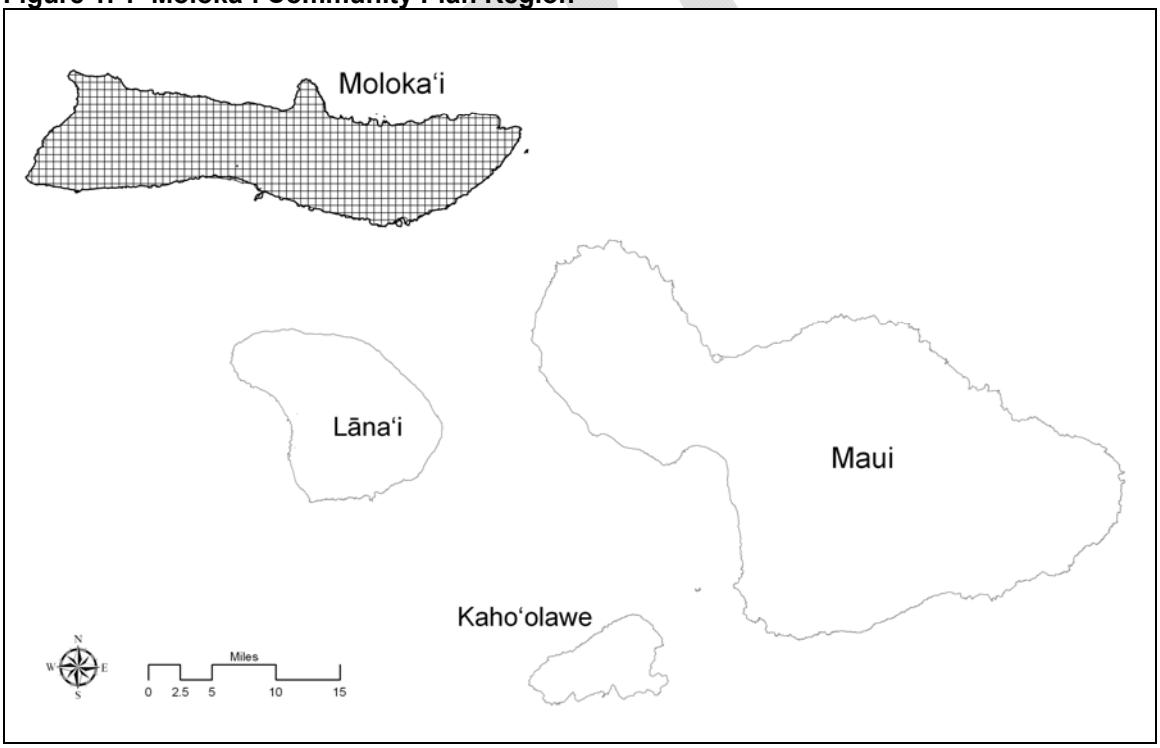
This community plan identifies current and anticipated future conditions and needs on Moloka`i. These conditions and needs are addressed throughout the plan by identifying strategic planning goals, policies, and actions that will guide decision-making and implementation through 2035. Chapter 1 provides a general description of the planning area, the planning framework provide by the Maui County General Plan and the State Plan, an overview of the community plan update process, plan organization, fast facts about Moloka`i, and a summary of the major problems and opportunities facing the island.

OVERVIEW OF MOLOKA‘I COMMUNITY PLAN AREA

Moloka`i is one of four islands that make up the County of Maui (see Figure 1.1). Its elongated shape embraces widely varying topographic and climatic regimes. The island of Moloka`i is comprised of approximately 172,000 acres (including the northern peninsula of Kalaupāpā) formed by a series of three volcanoes. The peninsula of Kalaupāpā, and some of the surrounding area on the northern coast make up Kalawao County, which is administered by the State of Hawaii's Department of Health.

Kaunakakai, the island's major population and commercial center, is located about midway along the south coast. The island’s only resort destination area is located at Kaluako`i, on the western end of the island. The small plantation communities of Maunaloa and Kualapu`u are located in the central plain, along with Hawaiian homestead settlements of Ho`olehua and Kalamaula. The settlement pattern along the southeast coast which becomes more rural and scattered as it extends from Kaunakakai to Hālawa Valley. (See Appendix 1.1 for a summary of Moloka`i history).

Figure 1. 1 Moloka`i Community Plan Region



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FAST FACTS ABOUT MOLOKA`I

PHYSICAL FEATURES:

- Moloka`i is 261 square miles or 172,000 acres (includes Kalaupapa)
- The island is about 38 miles long and 10 miles wide with 88 miles of coastline
- It is the fifth largest island of the eight main Hawaiian Islands
- The highest Elevation is 4,970 feet (1,514 meters)

POPULATION / DEMOGRAPHICS (2010 Census):

- 2010 population was 7,255 residents (excluding Kalawao County); a decrease of approximately 150 people from 2000
- Population by Age – 0 to 9 years: 15%; 10 to 19 years: 14%; 20 to 59 years: 47%; 60 years and over: 24%
- Average daily visitor count in 2012 was 707 and there was 429 visitor units

FLORA AND FAUNA

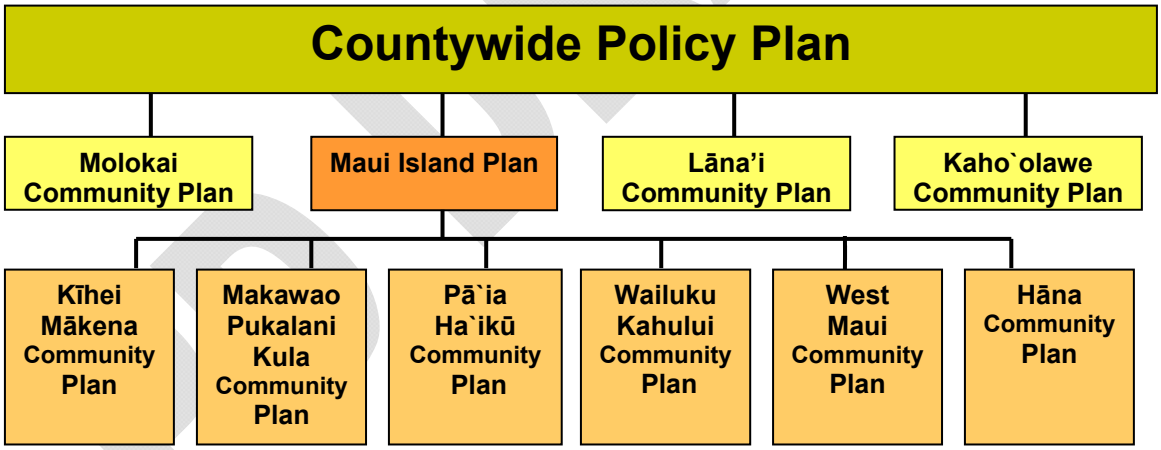
- 248 Hawaiian endemic species of flowering plants of which 39 are endangered and 25 are endemic to Moloka`i
- East Moloka`i Forest Conservation Area is comprised of 40,000 acres
- Moloka`i's south shore has the longest continuous fringing reef in Hawaii
- Papohaku Beach is one of the state's longest white sand beaches
- Nature Conservancy Mo`omomi Preserve contains sand dunes, lithified sand formations, rare endemic Hawaiian coastal plant species, nesting seabirds and green sea turtles, and the occasional Hawaiian monk seal.

1.1 MAUI COUNTY GENERAL PLAN STRUCTURE

A. GUIDANCE FROM THE COUNTYWIDE POLICY PLAN AND THE STATE PLAN

The County of Maui General Plan consists of three parts: (1) the Countywide Policy Plan, (2) the Maui Island Plan, and (3) nine community plans (see Figure 1.2). The General Plan, adopted in 1980 and updated in 1990, sets forth the long-term social, economic, environmental, and land use needs of the County. A General Plan update included the Countywide Policy Plan adoption in 2010, the Maui Island Plan adoption in 2012, and initiation of community plan updates in 2010. The General Plan supports the Hawai`i State Plan and coordinates with the State Functional Plans. In 2011, the priority guidelines and principles from the Hawai`i 2050 Sustainability Plan promoting sustainability were adopted as an amendment (Act 181) to the State Plan. In 2012 the Climate Change Adaptation Priority Guidelines (Act 286) were adopted. The adaptation policy specifies that county or state plans must address potential climate change impacts to agriculture, conservation lands, coastal and nearshore areas, natural and cultural resources, energy, the economy, and many other factors. Chapters 2 and 4 discuss how these two recent acts influence or shape the Community Plan.

Figure 1. 2 County of Maui General Plan Organization



From 2004 to 2012 the Maui County Code (MCC) was modified to create new requirements within Chapter 2.80B (General Plan and Community Plans). Section 2.80B.070 provides the specific requirements for the community planning process, including requiring that the community plans implement the Countywide Policy Plan's vision, principles, goals, and policies relating to the following core themes:

- Protect the Natural Environment
- Preserve Local Cultures and Traditions
- Improve Education

- Strengthen Social and Healthcare Services
- Promote Sustainable Land Use and Growth
- Expand Housing Opportunities for Residents
- Strengthen the Local Economy
- Improve Parks and Public Facilities
- Diversify Transportation Options
- Improve Physical Infrastructure Management
- Strive for Good Governance

B. THE 2016 MOLOKA'I COMMUNITY PLAN UPDATE

The Moloka`i Community Plan was initially adopted in 1984, and first updated in 2001. This 2016 Moloka`i Community Plan updates the 2001 plan with the new requirements of MCC 2.80B. New plan elements required by MCC 2.80B include:

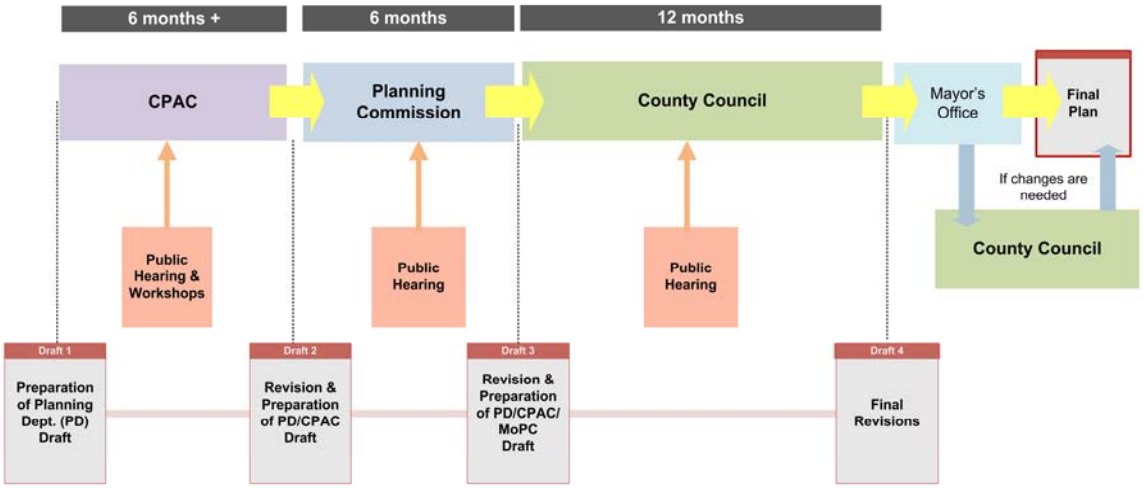
1) A statement of the social, economic, and environmental effects of development,
2) The desired sequence, patterns, and characteristics of future development,
3) A statement of urban and rural design principles and objectives,
4) A list of scenic sites and resources,
5) A description of a projected multi-modal transportation system,
6) A statement of desired population density including visitors and residents,
7) A list of streetscape and landscaping principles and desired improvements, and
8) Implementation requirements that identify priorities, timelines, estimated costs, and the County department accountable for the completion.

To update the Moloka'i Community Plan the Planning Department's Long Range Division worked with the Moloka`i community, stakeholders, agencies, the Moloka`i Community Plan Advisory Committee (CPAC), the Moloka`i Planning Commission, and the Maui County Council between 2010 and 2016. Technical studies and issue papers referenced during the update process are identified in Appendix 1.2.

MCC 2.80B specifies that the CPAC be composed of thirteen members appointed by the County Council and the Mayor. Planning Department staff and the CPAC have up to 180 days to conduct meetings and workshops that include public participation in the update.

The CPAC's recommendations were forwarded to the Moloka`i Planning Commission for public hearing and review (up to 6 months), then sent with Planning Department comments or revisions to the County Council for further review and adoption by ordinance (up to one year). This process is summarized graphically in Figure 1.3.

Figure 1. 3 Generalized Planning Process & Schedule



The Planning Department's Long Range Division conducted four community engagement events and numerous interviews to hear directly from residents their ideas and concerns. The events included (see Appendix 1.3):

June 2010 - Open house on issues, needs, and ideas

October 2010 - Two workshops on vision, issues, goals, and strategies

November 2014 - Open house to present the feedback from previous events

C. PLAN ORGANIZATION

The 2016 Moloka`i Community Plan Update is organized into ten chapters with maps and appendices. Chapter 1 is the introduction, followed by Chapter 2 which explores Moloka`i's future vision, sustainability and climate change adaptation. Each chapter provides background, existing conditions, issues, and goals, policies and actions.

Goals are intended to describe a desirable condition of the island by the year 2035. They are intentionally general, but are attainable. Policies are not intended as regulations, but instead provide general guidelines for County decision makers, departments, and collaborating organizations working toward attainment of the goals. Implementing actions are specific tasks, procedures, programs, or techniques that carry out policies. Actions may be implemented by the lead County agency or by another entity, such as the State or non-profit groups assisted by the County agency. This Moloka`i Community Plan is not intended to be used in the review of applications for "ministerial permits" - a permit that does not involve judgment or discretion and is issued based on established criteria or a set of adopted standards as established by law.

Chapters 3 and 4 discuss Moloka`i's environment, and natural, cultural, historic, and scenic resources, as well as hazard mitigation and climate change adaptation.
Chapter 5 discusses economic development strategies to diversify the economy based on the Molokai`i Economic Development Issue Paper and feedback from community engagement events and interviews.

Chapters 6 and 7 discuss land use, housing, and community design policies and actions that will shape the future location and form of development.

Chapters 8 and 9 discuss the existing and future needs for infrastructure and public facilities and services. The governance section looks at what changes in the system and function of governance are needed to guide the community toward a sustainable future.

Chapter 10 discusses implementation and monitoring and prioritizes actions from previous chapters with cost estimates, timelines, and implementing agency. The implementation table will facilitate funding decisions during the county budget process.

1.2 PROBLEMS AND OPPORTUNITIES

INTRODUCTION

The following outline of the problems and opportunities that Moloka`i faces represents not only issues that the county government must address but also top concerns expressed by the community through public outreach events and deliberations of the Community Plan Advisory Committee and Moloka`i Planning Commission.

It is important to clearly define a problem in order to figure out how to solve it, likewise, it is also important to have a critical understanding of opportunities that exist within the community and how to best take advantage of them in order to create a more sustainable, resilient, and livable future for Moloka`i.

PROBLEMS

A. **Economic Opportunities and Employment Characteristics:** Limited economic opportunity is one of the most significant problems facing the community. There is a lack of economic diversity, and therefore a lack of job opportunities. Moloka`i has lower incomes, higher unemployment rates, and a higher number of people receiving public assistance when compared statewide. In addition, the average educational level is relatively low.[1]

B. **Common Vision:** One of the critical issues identified in the Molokai Economic Development Issue Paper is to resolve the divisions within the community and define what trade-offs residents are willing to make. Until this is done, it may be difficult for the county and for the business community to make the investments that are needed to establish a more diverse economy.

C. **Water Infrastructure:** Water is essential, especially for economic growth on Moloka`i. According to the County Department of Water Supply, the issue for the island is not a lack of water supply, but the cost of storage and distribution infrastructure.

D. **Erosion and Sedimentation:** Erosion is a major issue on Moloka`i which is negatively impacting soils, streams, fishponds, wetlands, coastal waters, and reefs. Erosion is caused by a number of land use activities including ranching, farming, and development, as well as forest damage caused by feral ungulates. Siltation of Moloka`i's reefs and coastal waters is having detrimental effects on fish, limu, and other ocean resources which the Moloka`i community depends on for subsistence fishing and gathering.

[1] Moloka`i Economic Issue Development Issue Paper by John M. Knox & Associates, Inc., December 2010.

E. Housing: The availability of workforce housing and the variety of housing types on the island are limited. There is a lack of entitled land to build new housing and there is a limited variety of housing types available to meet the needs of Moloka`i residents.

F. Climate Change: Climate change will become increasingly serious before the middle of the 21st century and will impact Moloka`i's economy, the built environment, historic and cultural resources, infrastructure systems, and ecosystems and natural resources.

OPPORTUNITIES

A. Strong Caring Community: Moloka`i is a special place with a distinctly rural Hawaiian lifestyle. Based on several community workshops and interviews, it's clear that a slow and cautious approach to future development on the island is preferred by many. As noted in *Moloka`i, Future of A Hawaiian Island*, the vision for the island "is based on the values of pono and aloha 'aina".

Future growth on the island should build on Moloka`i's strengths while maintaining Moloka`i's uniqueness. The open, uncrowded and undeveloped nature of Moloka`i, as well as its clean air and water and abundant subsistence resources are valuable assets. Unlike many other places, residents still help each other with no strings attached. There are an abundance of community luaus, and a significant number of extended families living together or in close proximity. There is a feeling of sharing, belonging and community which should be preserved.

B. Cultural Resources and Traditions: Moloka`i has an abundance of cultural and archaeological resources and a strong connection with cultural traditions and practices that provide a solid foundation for the future. The island is purported in oral tradition as the birthplace of hula; it has over 100 sites on the National Register of Historic Places distributed throughout the island. As a result, development of a new model of sustainable tourism appears to be a real possibility. This alternative approach described in the *2006 Moloka`i Responsible Tourism Initiative*[2] is based on the distinctive characteristics and attributes of the island

C. Distinctive Rural Character: Moloka`i's natural beauty and rural character were noted as a key asset in the 2001 Community Plan and they continue to be major attributes of the island. Unlike other islands in the state, Moloka`i's beaches are still generally accessible and uncrowded. In addition, the rural character and genuine

[2] Molokai Responsible Tourism Initiative – A Community Based Visitor Plan for Molokai, by Davianna Pomaikai McGregor, PhD., 2006.

sense of aloha is a draw for many visitors, affording an experience that is different from other islands.

D. <u>Entrepreneurial Spirit</u>: Many of Moloka`i's residents live there because they value the sense of community and lifestyle of the island. Since employment opportunities are limited, many residents have turned to starting and running their own businesses. This trend is evident in Kaunakakai, where almost all of the businesses are owned by local residents, some of whom have successfully maintained their operations over several decades.

2 | MOLOKA`I'S FUTURE

This chapter provides the community plan's vision and strategic framework that guide the key policies and actions needed to address the major issues that face the island in the next 20 years. The components of this strategic framework include:

2.1 Moloka`i Vision Statement;
2.2 Population;
2.3 Sustainability and Climate Change Adaptation.

The Moloka`i vision statement, retained from the 2001 Community Plan, articulates the community's belief in who and what it is, what it wants to become, and how to achieve that vision.

The population discussion presents a brief analysis of past and future population trends. The *Socio-Economic Forecast Report*[1], produced by the County of Maui Planning Department is the primary source of data for this discussion.

Finally, in response to the State of Hawai`i's recent adoption of both Guiding Principles of Sustainability and Climate Change Adaptation Priority Guidelines into the Hawai`i Revised Statutes (HRS), Section 2.3 provides a brief discussion and outline of how climate change adaptation strategies and measures to develop a more sustainable island community are woven into the policies, goals, and actions of the plan's chapters and implementation table.

[1] County of Maui, Department of Planning. *Socio-Economic Forecast Report.* September 2014

2.1 MOLOKA`I VISION STATEMENT

Moloka`i is the last Hawaiian Island. We who live here choose not to be strangers in our own land. The values of *aloha `aina* and *malama `aina* (love and care for the land) guide our stewardship of Moloka`i's natural resources, which nourish our families both physically and spiritually. We live by our *kupuna's* (elders) historic legacy of *pule o`o* (powerful prayer). We honor our island's Hawaiian cultural heritage, no matter what our ethnicity, and that culture is practiced in our everyday lives. Our true wealth is measured by the extent of our generosity.

- We envision strong *`ohana* (families) who steadfastly preserve, protect and perpetuate these core Hawaiian values.

- We are a wise and caring community that takes pride in its resourcefulness, self-sufficiency and resiliency, and is firmly in charge of Moloka`i's resources and destiny.

- We envision a Moloka`i that leaves for its children a visible legacy: an island *momona* (abundant) with natural and cultural resources, people who *kokua* (help) and look after one another, and a community that strives to build an even better future on the *pa`a* (firm) foundation left to us by those whose *iwi* (bones) guard our land.

2.2 POPULATION GROWTH

Population change on Moloka`i is inevitable in the coming decades. Natural population growth (births), in-migration, and out-migration are responsible for population change overtime and occur at different rates and for different reasons. While the island experienced a moderate population decline from 2000 to 2010, the population is forecasted to increase during the Community Plan's 20 year planning horizon. Population growth can have both positive and negative impacts on a community. It can exacerbate infrastructure-capacity deficiencies, place additional demands on natural resources, shift the cultural and social makeup of the population, and change the physical landscape. Population growth can also contribute to the quality of life of a community by stimulating the economy, growing the tax base, providing employment opportunities, and providing economies of scale. This Community Plan aims to address community needs and provide economic opportunities to retain Moloka`i's families, and ensure that future resident and visitor population growth does not compromise the island's natural resources, infrastructure and services, and Moloka`i lifestyle.

A. HISTORIC TRENDS AND POPULATION FORECAST

The Socio-Economic Forecast[2] is a planning tool based on projections developed by the State of Hawai`i Department of Business, Economic Development and Tourism (DBEDT). The population projections are based on trends and model assumptions that are absent of policy changes or directives. Because a long-term forecast identifies long-term trends and omits short-term variations, there will be surprises along the way, even if a forecast turns out to be highly accurate. Ultimately, the forecast represent a likely future and is a useful starting point for planning discussions.

The 2010 Census counted 7,255 residents living on Moloka`i. The 2014 County of Maui Socio-Economic Forecast Report forecasted that an additional 2,524 residents will live on the island by the year 2040, for a total population of 9,779 - a 1% annual increase in resident population. Figure 2.1 depicts Moloka`i's historic population growth, identifies significant economic events between 1896 and 2010 and shows population projections out to 2040 based on three scenarios: 1) no growth, 2) a mid-range annual growth of ½%, and 3) a high annual growth of 1%.

Figure 2.2 portrays Moloka`i's age distribution in 2010 and 2035 and it is clearly evident that the island's population is aging. The 70 plus age group is forecasted to grow from 749 to 1,957, an increase of over 160% between 2010 and 2035. This demographic change has significant impacts to public services as they relate to the elderly, including housing, transportation, health care, and eldercare services. In addition to the challenge of providing more senior services, the wage-earning population that typically supports children and seniors will be proportionally smaller.

[2] County of Maui, Department of Planning. *Socio-Economic Forecast Report.* September 2014

Figure 2. 1 Moloka`i Resident Population 1896 - 2040

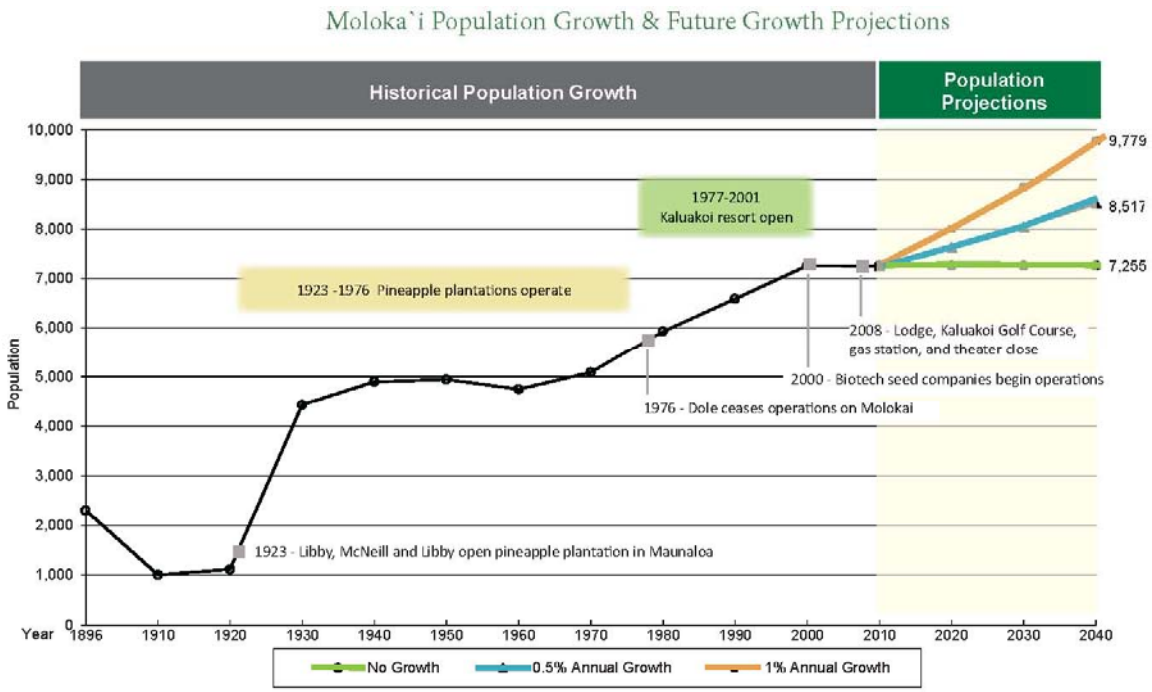


Figure 2. 2 Moloka`i Island Age Distribution 2010 and 2035

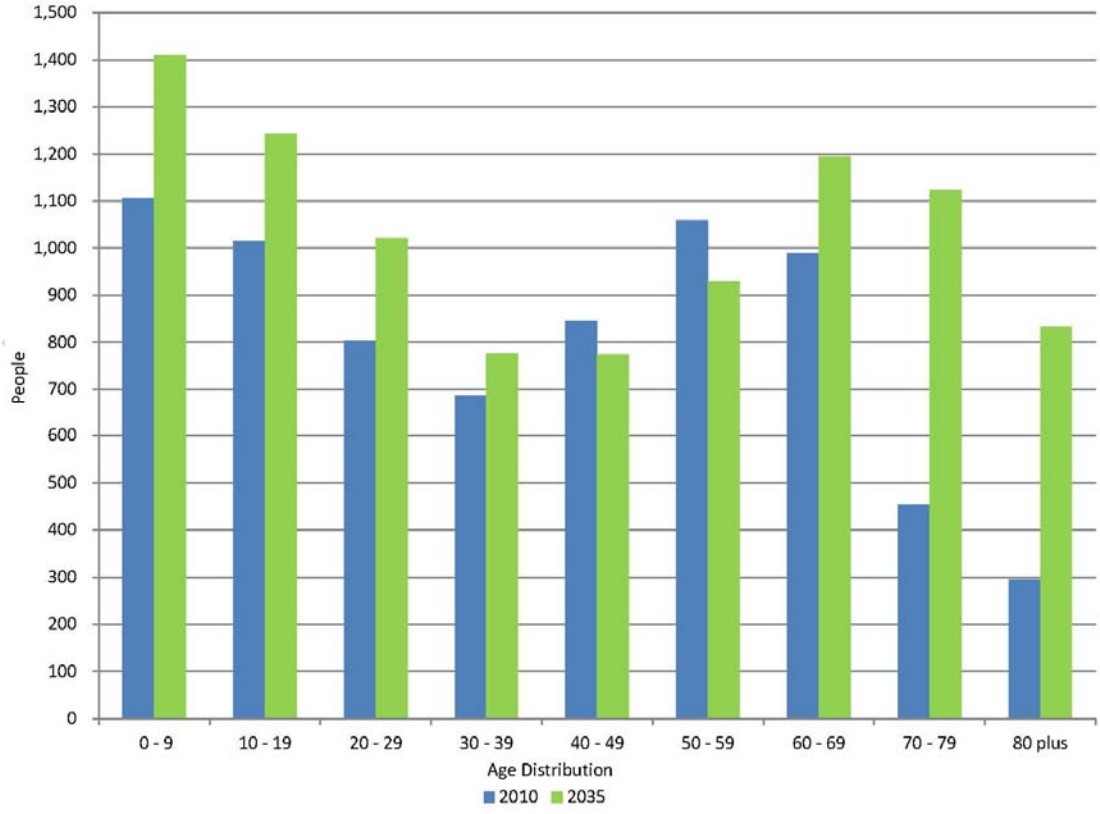
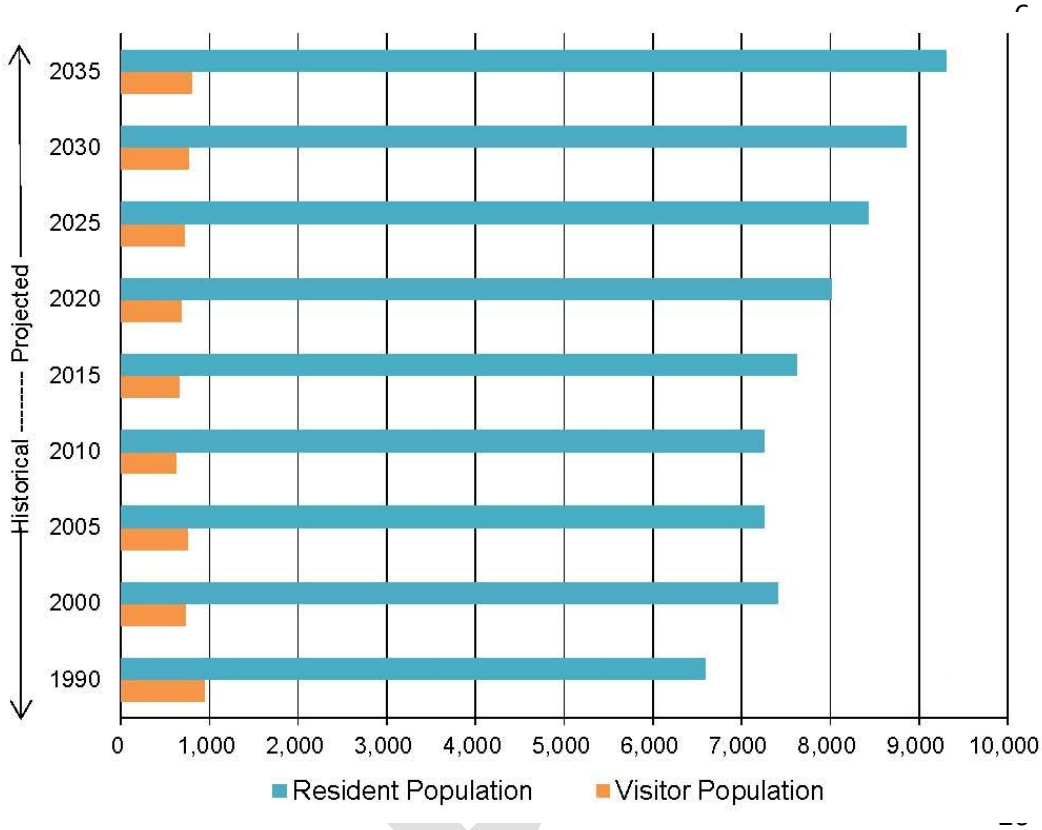


Figure 2.3 depicts visitor/ resident population trends from 1990 to 2035. In 1990, the ratio of tourists to residents was approximately 1 to 7. By 2010 the ratio dropped to approximately 1 to 12, and this ratio is forecasted to remain constant to 2035.

Figure 2. 3 Moloka`i Visitor/Resident Population 1990 to 2035



The potential issues and opportunities presented by population growth will be addressed throughout the various chapters of the Community Plan.

2.3 SUSTAINABILITY AND CLIMATE CHANGE ADAPTATION

One intent of this community plan update is to help establish a sustainable and resilient future for Moloka`i. This section provides an introduction and brief guide to how sustainability and climate change adaptation are woven into the fabric of the plan through a variety of policies and actions.

A. SUSTAINABILITY

Sustainability has become a fundamental concept within comprehensive and community planning over the past decade. It refers to the ability to address the needs of the present without compromising the ability of the future to meet their own needs. It requires a need to consider the long term environmental, social, cultural and economic costs of present day actions. Sustainability is a process, rather than an end-state, whereby a community functions within the concept that environmental, economic, and social systems are linked and must be in balance.

Sustainability is a particularly important concept in a region as fragile and remote as the Hawai`ian Islands. In 2011 the Hawai`i State legislature enacted into law State Bill 283, which established sustainability as a state priority by incorporating the Hawai`i 2050 Priority Guidelines and Principles into Chapter 226 Hawaii Revised Statutes (HRS), the Hawai`i State Planning Act. The updates to the County of Maui's General Plan will integrate this concept of sustainability and the guiding principles in Hawai`i 2050. (See Appendix 2.1 Definition of Sustainability in Hawai`i and Appendix 2.2 Guiding Principles of Sustainability).

B. CLIMATE CHANGE ADAPTATION

In 2012 the Hawai`i State legislature enacted into law Act 286, which amended the Hawai`i State Planning Act, Chapter 226 HRS, by adding climate change adaptation priority guidelines (See Appendix 2.3 Climate Change Adaptation Priority Guidelines). The guidelines are intended to prepare the state for climate change impacts to numerous components of the natural and built environments and society as both near-term implementation options and a strategy for the State over the long term. Additionally, under the Hawai`i State Planning Act, priority guidelines shall take precedence when addressing areas of concern such as County decision making and allocation of resources, county general plans, and development plans as well as capital improvement project appropriations and land use decision making.

Climate change will become increasingly serious before the middle of the 21st century, and will have profound impacts for societies all over the world, including for the Hawaiian Islands. Climate change will profoundly affect not only Hawai`i's natural environment but also its communities and economy. Major climate change effects expected for Hawai`i include: 1) warmer temperatures, 2) sea-level rise with resultant flooding, beach erosion, and damage to coastal property, 3) sea surface temperature increase and ocean acidification with negative impacts to coastal and marine ecosystems, 4) increased frequency and severity of storms, with increased vulnerability to storm damage, and 5) increased drought with variable effects on aquifer

recharge, stream flows and freshwater resources. These effects will adversely affect communities and sectors throughout Hawai`i, including the economy (agriculture, tourism, fisheries, and trade), the built environment, historic and cultural resources, infrastructure systems, and ecosystems and natural resources[3]. The limitations of downscaling climate models for local impacts to Molokai, as well as each of the other Hawaiian Islands and uncertainty in natural climate and weather patterns make long term predictions very complex. Current observations - such as trends in declining rainfall and rising temperature and seas - can serve as indicators of Hawaii's and Molokai's future and may help information communities as they begin to plan for climate change.

Climate change mitigation measures, such as lessening our dependence on fossil fuels, reducing emissions, and changing the way we design and build communities, will need to be taken to help lessen the effect of human impact on climate in the future. Climate change adaptation seeks to reduce the vulnerability of biological systems to climate change effects such as sea-level rise, increased severity of storms, and increased drought conditions and flooding. Climate change adaptation requires strategies and actions to reduce the adverse consequences of climate change, as well as to harness any beneficial opportunities. While the precise timing and impact cannot be predicted, it is clear that significant climate change adaptation and mitigation measures will be needed by mid-century. The intensity of climate change impacts in Hawai`i can, to a significant degree, be mitigated. By taking action now, it is possible to reduce potential damage in the future. Science-based coastal and climate hazard information must be compiled, understood and appropriately applied to specific planning areas in Moloka`i. Inventories must be developed and gaps in data identified to better understand how climate change will impact Moloka`i and how best to minimize those impacts.

C. WORKING TOGETHER TOWARDS A SUSTAINABLE AND RESILIENT MOLOKA`I

This is a pivotal moment in time for Moloka`i to face the intertwined challenges of sustainability and climate change. In recognizing the links between society, environment, and economy, sustainability acknowledges the ecological limits of natural systems and affirms that humanity's well-being is fundamentally dependent on the health of our environment. Moloka`i can become resilient, ready for change, through strengthening it's society and natural and built environments, and diversifying its economy. The elements needed to achieve this are identified in the individual chapters of the Community Plan. How these elements work together is described below.

**SOCIETY – MOLOKA`I'S PEOPLE AND CULTURE:** Caring for the people is a key component of ensuring a sustainable and resilient Moloka`i. This will involve providing education opportunities for all ages and a full spectrum of social services. Critical actions include expanding primary, emergency and in-home care, hospice facilities and services, and services for families in crisis, as well as improving the quality of the schools and increasing college level education available on island. It will also be important to foster community participation in stewardship of the natural environment and historical and cultural resources to build collaboration between

[3] *Climate Change Adaptation Priority Guidelines,* Act 286

different levels of government, large landowners, non-profit groups, private businesses and the community. Moloka`i's culture and sense of place will be honored by protecting historic and archaeological sites, cultural landscapes, and the natural and cultural resources upon which subsistence and traditional lifestyles depend.

Ensuring a resilient and sustainable society will also require providing a variety of affordable housing types for all stages and ages of life and increasing food security through expanding production of locally grown food, supporting subsistence farming, hunting, fishing, and gathering, as well as introducing youth to agriculture through programs such as Future Farmers of America and 4H. Climate change adaptation - building on existing hazard mitigation principles plus new ways of designing communities and infrastructure - will also be necessary for the health and safety of the people and the environment. This will be achieved by actions such as relocating critical structures out of hazard prone areas, incremental adaptation of harbors, increasing water conservation and reuse, and managing aquifer recharge areas.

THE NATURAL AND BUILT ENVIRONMENT: How the built environment is designed greatly influences the protection and sustainability of the natural environment as well as the sustainability of a society and culture. A well designed community is characterized by a compact and pedestrian oriented mix of land uses, multi-modal transportation networks, diversity of housing, strong sense of place and culture, and preservation of open space, agricultural land, and natural resources. Moloka`i will build upon its historic small town development patterns, integrate land use and transportation planning, and make development decisions predictable, fair and cost-effective to create sustainable communities into the future.

Natural resources and landscape features such as native forests, valleys, wetlands, springs, dunes, and coral reefs will be protected, restored, and valued for the environmental services they provide and for their cultural importance. Feral ungulates and invasive species will be managed and principles of native Hawai`ian land management, including ahupua`a, will be integrated to help guide resource management. Green technology, sustainable building practices, and green infrastructure solutions will also be used.

THE ECONOMY: Fostering a robust and diversified economy is the third component to working toward a sustainable and resilient Moloka`i. This will require growing a culturally-appropriate tourism industry, supporting agriculture, encouraging new industries and entrepreneurs, expanding education and support services for small businesses, and providing necessary infrastructure, land, and affordable sea and air transportation options. Lowering energy costs by reducing dependence on fossil fuels and increasing renewable energy is also a key to providing stronger economic opportunities and becoming more sustainable. This will be achieved by increasing the generation and use of renewable energy sources, promoting the use of electric vehicles and exploring options for bio-fuels, bio-diesel, and waste-to-energy technology. Water resources will be used in a sustainable manner by recycling wastewater for irrigation and exploring options for re-use of household graywater.

3 | ENVIRONMENT - NATURAL AND HERITAGE RESOURCES

Moloka`i's environment contains diverse natural ecosystems, natural resources, developed areas of towns, agricultural and industrial lands, and heritage resources. Heritage resources include cultural, historic, and archeological resources that are both built and within the natural landscape, such as historic cultural trails and gathering sites. The environment is the whole of these resources: the history, built places, open spaces, ranchlands, dunes, dryland forests, wetlands, cliffs, forest lands, and beaches; these provide the scenic resources of Moloka`i.

This chapter will discuss ecosystems and natural resources in section 3.1; heritage resources, including the interface of the natural environment with human built structures and activities in section 3.2. Section 3.3 addresses scenic resources that shape our experience of place every day. The elements discussed in this chapter are fundamental to sustaining the quality of life enjoyed by Moloka`i residents and are essential for supporting the living cultural traditions of native Hawaiians. Subsequent chapters discuss effects from multiple natural and human-created hazards, including climate change, land use, and community design that need to be considered in combination with the elements of this chapter.

3.1 NATURAL RESOURCES

Moloka`i's pre-human diverse ecosystems (interdependent animal and plant species and their habitats) were extensively altered by human settlement beginning with the arrival of Polynesians through the western plantation era, as well as by present land use activities. The primary changes were clearing of forest lands for agriculture and building sites, and the introduction of non-native flora and fauna, particularly ungulates - hoofed animals, initially free-range and later feral (wild). Feral ungulates destroyed the forest understory and tree roots, which set off a chain of environmental damage from mauka to makai (mountains to sea). Erosion created bare land where invasive plants become established, which resulted in native species loss, and reduced water recharge of the aquifer. Invasive plants, animals, and insects decimated native species, such as forest birds, and decreased bio-diversity creating a less resilient forest ecosystem. Excessive erosion resulted in sedimentation of surface waters and coral reefs.

Protection and restoration of Moloka`i's forest ecosystems directly helps to ensure a sustainable water supply, and to reduce erosion, surface water runoff, flooding, and siltation of reefs and ocean waters. The forest ecosystem greatly influences many elements of Moloka`i's community – natural and heritage resources, recreation, agriculture, tourism, infrastructure, and economic

viability. Recent studies have calculated financial values for services provided by forest ecosystems[1] (See Appendix 3.1).

> A University of Hawai`i study examined the various services provided by O'ahu's Ko`olau forests - including water recharge, water quality, climate control, biodiversity, and cultural, aesthetic, recreational, and commercial values. These services were calculated to have a net present value of between $7.4 and $14 billion. Approximately half of that amount is attributed to the forest's contribution to ground and surface water quality and quantity. Other watersheds across the state were estimated to be comparable in value.[2]

Most development occurs in the coastal area. In addition to the sediment polluted water runoff from higher elevations, nonpoint source pollutants from homes, businesses, farming and industry accumulate in the coastal areas and can decrease coastal water quality and reef health.

Existing Conditions

The largest native forest ecosystem is the East Moloka`i Mountains that contain deep, mostly inaccessible, valleys with high-quality habitat for stream fauna, forest birds, and native snails and insects. Moloka`i's other significant habitats are lava tube caves, montane bogs, wet forests and shrublands, cliff and coastal systems, and nine offshore islets. These natural ecosystems provide recovery, or critical, habitat identified by the USFWS for the Maui parrotbill, and ʻākohekohe (crested honeycreeper). Critical habitat for the Blackburn's sphinx moth in part overlaps 24,333 acres designated as critical habitat for 41 endangered plants and many additional threatened species[3].

Approximately thirty percent of Moloka`i is in the State Conservation District under the jurisdiction of the State DLNR. Most areas dominated by native species are in East Moloka`i Mountains or along the coasts (see Map 3.1). Numerous federal, state, and county plans and regulations support actions to protect, conserve, or restore the natural resources of these areas. Partnerships between agencies, non-profits, community groups and stakeholders have been formed but there is a need to expand both partnerships and collaboration in order to more effectively address the complexity and increasing scope of environmental issues.

Hawaii's Comprehensive Wildlife Conservation Strategy identified key management areas and the agency or group that manages the land or resources[4]. Many of these groups and agencies work in partnerships to accomplish their goals. Although there has been extensive conservation work accomplished to date, the State has identified additional areas that need to be protected to ensure the long-term conservation of Moloka`i's habitats and wildlife, such as cave ecosystems,

[1] Department of Land and Natural Resources, State of Hawai`i (2011). *The Rain Follows the Forest*.
[2] Ibid. Pg. 4.
[3] Hawaii's Comprehensive Wildlife Conservation Strategy, State of Hawaii, 2005.
[4] Ibid

coastal wetlands and shorelines, and stream corridors. Key threats to these areas include feral ungulates, predators, invasive species and human intrusion. Often in addressing one threat another threat can be reduced. For example, forest restoration is being addressed by abatement of feral ungulates. Once feral ungulates cease to disturb the soil the native forest can regenerate in small areas, which reduces the area for invasive species to establish and reduces soil erosion and subsequent siltation of nearshore waters.

Recent state plans, such as the *Coastal Non-point Pollution Control Program*[5], with updated management measures in 2010; the *Implementation Plan for Polluted Runoff Control*[6]; and *the Ocean Resource Management Plan*[7]*(ORMP),* are addressing comprehensive ecosystem management by connecting upland land-based activities to ocean resource conditions. Excessive sediment, and other non-point pollutants such as nutrients, herbicides and heavy metals, are being addressed by multiple efforts (see Map 3.2). Hawaii's Local Action Strategy has eight partner agencies addressing land-based pollution threats to reefs in the Kawela watershed. Best Management Practices (BMPs) for feral ungulates and fire are being extended to new areas and sediment retention basins will be constructed and maintained along the south shore. Another example is the USDA Natural Resource Conservation Services (NRCS) implementation of many soil conservation projects on Moloka`i using the Farm Bill's Environmental Quality Incentives Program (EQIP) and other landowner assistance programs.

Restoration work of wetlands and riparian (stream edge) areas can play a critical role in reducing polluted runoff by intercepting surface runoff, subsurface flow, and certain groundwater flows. Moloka`i community groups, non-profits, and schools are actively restoring lo`i kalo (taro patches) and auwai (irrigation ditches) that reduce and filter sediment loads. At Kawaikapu, the Moloka`i Land Trust plans to use the ahupua'a-based management system to restore lands, including community restoration of ancient taro fields. In Halawa Valley restoration of taro fields, once hundreds of acres, is ongoing.

The ORMP emphasizes links between human activities and the environment and the need for increased stewardship[8]. Stewardship usually begins with awareness of a connection between one's activities and an environmental issue. A survey of Hawaii residents on coral reef management priorities found a high level of public awareness of the decline of reef health but little knowledge of how their personal land-based behavior contributed to that decline or how to do activities differently to help the reefs[9]. Currently, public environmental education and involvement activities are available on the island of Moloka`i and contribute to building a volunteer base for on-going stewardship. Some non-profits are using volunteer monitoring to build stewardship.

[5] Coastal Nonpoint Pollution Control Program, State of Hawaii, 1996.

[6] Implementation Plan for Polluted Runoff Control, State of Hawaii, 2000.

[7] Ocean Resource Management Plan, State of Hawaii, 2011.

[8] Ibid

[9] Hawaii Coastal Zone Management Program, final Evaluation of Findings, Office of Ocean and Coastal Resource Management, NOAA, 2010.

Involvement in volunteer monitoring, or citizen science, not only raises awareness and creates stakeholders, but also increases science literacy within the community.

The Hawaiian Islands Humpback Whale National Marine Sanctuary includes Moloka`i's shorelines, except the north shore, and channels between Moloka`i, Lāna`i, Maui, and an extensive ocean area from Moloka`i's west shore (see Map 3.1). Created by Congress in 1992, the Sanctuary protects humpback whales and their habitat and constitutes one of the world's most important humpback whale habitats. The National Oceanic and Atmospheric Administration (NOAA) and the State of Hawai'i's DLNR jointly manage the Sanctuary.

The State DLNR's Division of Aquatic Resources (DAR) manages four areas to protect ocean fishery resources near Moloka`i. Principal impacts to reef health and fisheries are water run-off with excessive sediment and other water pollutants, recreational over-use, and over-fishing. On Moloka`i's south shore the Kaunakakai Harbor Fishery Management Area sets limits on fish harvest amounts and defines the fishing season and fishing areas. Bottomfish Restricted Fishing Areas are located in two open ocean areas: 1) between the southeast end of Moloka`i and Maui, and 2) far offshore from the southwest point. A third Bottomfish Restricted Fishing Areas is along the shoreline off the northeast side of Kalaupapa National Historic Park and extends eastward in the nearshore waters along Moloka`i's north shore. The Bottomfish Restricted Fishing Areas are co-managed with the State DLNR by NOAA and National Marine Fishery Service (NMFS), a division of NOAA.

In northwest Molokai is Mokio Preserve, a 1,718 acre parcel owned and managed by the Molokai Land Trust (MLT), with five miles of coastline, dune, and wetland ecosystems. East of Mokio is Mo'omomi Preserve, 921 acres of the most intact coastal beach strand and sand dune area in the main Hawaiian Islands. It is owned by the Nature Conservancy with MLT assisting with stewardship activities.

Development generally disrupts the natural processes of ecosystems as well as increasing non-point pollutants in surface water run-off. However, newer design guidelines and techniques can integrate development into the landscape with less impacts to water quality or animal and plant habitats and maintain ecosystem connectivity, One technique is green infrastructure for surface water management, that uses natural systems or constructed soil, rock, and plant-based systems (see section 8.3 in Chapter 8 – Infrastructure). The County of Maui increased water quality regulations for development in 2013 that require on-site retention of site run-off.

Climate Change and Natural Resources

The effects of climate change on natural resources has already been observed and will continue to challenge ecosystems health due to an increase in frequency and severity of climate-related disturbances (e.g., storms, flooding, drought, wildfire, invasive species, and ocean acidification) combined with an increase effects from human land and natural resource use.

Marine ecosystems, coral reefs and nearshore habitats, are experiencing increasing sea surface temperatures leading to thermal stress and coral bleaching. The rise in sea levels and coastal inundation will change the nearshore environment, including habitat loss and shifts. This is further amplified by accelerated rise and change in storm and cyclone patterns, which will increase wave energy and erosion patterns.

Terrestrial ecosystems are experiencing warming air temperatures, which may cause ecosystems to shift upslope or decline in size. Higher elevations will have a greater degree of change. Changes in precipitation could affect terrestrial ecosystems through increases in flooding, erosion, drought, and fire. As the extent of native habitats diminishes, the range for pests, diseases, and invasive species may expand.

B. ISSUES

Issue 1: Ecosystems are declining due to an increase in invasive animal and plant species, and soil erosion.

Issue 2: Excessive sediment from erosion severely impacts coastal water quality and the health of the southern reef.

Issue 3: Cumulative impacts to surface and coastal waters from pollutants – sediment, home and business chemicals, herbicides, and fertilizers – are not well understood by the community.

Issue 4: Climate change will stress and change ecosystems, with some ecosystems declining.

C: GOAL, POLICIES, ACTIONS

Goal **Moloka`i's environment and natural resources will be protected, restored, and preserved for future generations.**

Policies

1. Support collaboration and partnerships for natural resource management, watershed planning, funding, and action implementation.

2. Encourage watershed, or ahupua'a, based resource management partnerships, initiatives, and approach for natural and cultural resource protection, restoration, education, and enforcement.

3. Encourage the implementation of State plans: *Hawai'i Comprehensive Wildlife Conservation Strategy; Coastal Non-point Pollution Control Program Management Plan*; *Implementation Plan for Polluted Runoff Control*; *Ocean Resource Management Plan;* and other plans and programs for comprehensive ecosystem management.

4. Encourage protection and restoration of biodiversity, and native plant and animal species and habitats through land conservation, resource management, education, invasive species prevention, wild fire prevention, and stewardship.

5. Ensure that the design and construction of new development protects surface and coastal water quality from point source and non-point pollution.

6. Encourage environmental education programs, including green infrastructure, for designers, developers, and builders.

7. Support a significant increase in public outreach, education, and involvement events to build community-based stewardship and implementation capacity.

8. Recognize and support agricultural, forestry, and game best management practices as key elements to maintain, preserve, and protect Moloka`i's land, water and marine resources.

9. Support the protection and, where appropriate, restore Moloka`i's coastal resources and water quality through green infrastructure best management practices for surface water and sediment management.

10. Encourage a system of floating preserves (adaptable areas of protection) as a means of managing nearshore coastal resources.

11. Encourage and support the establishment and expansion of native plant species, utilizing appropriate practices and techniques for propagation and planting.

12. Encourage adequate State funding for the State quarantine and inspection process.

Actions

Table 3.1 Natural Resources

No.	Action	Lead - County / Other	Partners
3.1.01	Assist with a conference or workshops of key federal, state, and local agencies, and community and non-profit leaders to discuss, plan, and prioritize actions to address environmental and natural resource issues.	Mayor's Office (Environmental Coordinator)	Planning Department Department of Water Supply
3.1.02	Compile data to create maps (location and baseline survey) of the highest value ecological areas and natural resources.	Planning Department	DLNR The Nature Conservancy (TNC) Molokai Ranch East Moloka`i Watershed Partnership(EMWP)
3.1.03	Compile date to create maps of the primary and secondary groundwater recharge areas to prioritize protection and restoration efforts.	Water Department	State (CWRM) Dept of Planning USGS
3.1.04	Assist with conducting workshops with State and community groups to implement an integrated natural and heritage resources management system.	Mayor's Office (Environmental Coordinator)	State DLNR - Na Hale Trail and Access program NGOs
3.1.05	Assist with conducting, or coordinating, public education and involvement events to increase implementation through community stewardship, trainings, and interpretive signage.	Mayor's Office (Environmental Coordinator)	DLNR Molokai Ranch Watershed Partnerships TNC
3.1.06	Assist with the development of a West Moloka`i dry native forest and lowland shrub restoration program.	Mayor's Office (Environmental Coordinator)	DLNR Molokai Ranch TNC
3.1.07	Consult with UHMC-Moloka`i to develop and manage a native plant nursery for student and community restoration projects.	Mayor's Office (Environmental Coordinator)	UHMC-Moloka`i DLNR

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2

Table 3.1 Environment and Natural Resources			
No.	**Action**	**Lead - County / Other**	**Partners**
3.1.08	Conduct outreach to agricultural, ranching, and development interests to implement best management practices to reduce excess sediment loss, and herbicide and pesticide use.	Office of Economic Development	DOH Clean Water Branch CTAHR NRCS
3.1.09	Assist landowner(s), upon request, to design or construct small-scale water retention projects to increase infiltration to the aquifer and control surface water run-off. Include bioretention methods to reduce sediment and nutrient loads from entering coastal waters.	Dept of Public Works	DLNR NGOs Natural Resource Conservation Service (NRCS) USGS
3.1.10	Conduct outreach to agricultural, ranching, and development interests to implement best management practices to reduce excess sediment loss, and herbicide and pesticide use.	Office of Economic Development	DOH Clean Water Branch CTAHR NRCS
3.1.11	Assist landowner(s), upon request, to design or construct small-scale water retention projects to increase infiltration to the aquifer and control surface water run-off. Include bioretention methods to reduce sediment and nutrient loads from entering coastal waters.	Dept of Public Works	DLNR NGOs Natural Resource Conservation Service (NRCS) USGS
3.1.12	Work with federal, state, and county agencies to initiate a program to provide education and support for community stewardship of the coastal areas, including conducting baseline studies on coastal water quality.	Mayor's Office – (Environmental Coordinator)	DLNR DOH, Clean Water Branch
3.1.13	Develop a toolbox of green infrastructure best management practices and conduct workshops for consultants, designers, developers, and builders.	Department of Public Works (DPW)	State Office of Planning - Greenway Program
3.1.14	Develop a toolbox of best management practices (BMPs) for use by residents and businesses to improve ecosystem health and water quality in urban and coastal areas: • Provide assistance or workshops on BMPs and education to change business and household practices. Maintain a website for public education on water quality pollution prevention and BMPs.	Department of Water Supply	State Dept. of Health (DOH -Clean Water Branch) Public Works Planning State DLNR

3

3.2 HERITAGE RESOURCES

Throughout Moloka`i's landscape there is an abundance of archaeological and historic sites and traditional cultural properties that document habitation by ancient Hawaiians, as well as, the more recent immigrants and their settlements. Archaeological, historic, and cultural resources combine to express the heritage of the people and place. Some residents practice a subsistence lifestyle, relying upon the island's resources for fishing, hunting, and gathering. The people of Moloka`i are proud of their history, cultural identify, and unique Molokaian lifestyle, and are determined to uphold and strengthen these qualities for future generations.

Moloka`i is historically significant as a center of Hawaiian culture and learning. It is purported in the oral tradition as the birthplace of the hula and a training ground for powerful priests. Traditional Hawaiians believed the *'aina* (land) was their ancestor and that it was their *kuleana* (responsibility) to search for balance and harmony with nature and take care of the land, and in turn the land would take care of them. The island's natural resources were intimately connected to the cultural resources, and together provided the foundation for the traditional Hawaiian lifestyle.

By the mid 1800s, Europeans and Americans were established on Moloka`i. As these populations increased, the plantation and ranching industries took hold on the island, producing commercial ventures operating in the 1800s and 1900s. Several small-scale attempts at sugarcane cultivation were made between 1870 and 1900, however sugar plantations on Moloka`i did not reach the same level of success as those on neighboring islands.

Beginning in the 1920s cattle ranching and pineapple plantations influenced growth on Moloka`i. Kaunakakai became the shipping and political center of the island as well as the home of Molokai Ranch's headquarters. In 1923, Libby, McNeill & Libby established a pineapple plantation in Maunaloa. Kualapu`u, originally the location of a small out-station for Molokai Ranch, became home to the California Packing Corporation pineapple plantation in 1927.

A. EXISTING CONDITIONS

Moloka`i has hundreds of documented archaeological and historic sites as well as numerous sites that are undocumented. West and Central Moloka`i lands have been extensively surveyed and documented; while the East End has not been adequately surveyed, considering the region's cultural significance. Approximately 120 Moloka`i sites are listed in the State Inventory of Historic Properties, and roughly 75 of those sites have been entered in the Hawai`i and/or National Registers of Historic Places (see Map 3.2). Archaeological sites and traditional cultural properties are distributed across the landscape and encompass both Hawaiian cultural sites as well as areas representing more recent use. Traditional cultural properties are defined as an area or place "that is eligible for inclusion in the National Register because of its association with cultural

practice or beliefs of a living community".[10] Some of Moloka`i's most noted cultural resources include ancient Hawaiian complexes of Halawa Valley, *'Ili'ili'ōpai heiau* of Mapulehu, east end fishponds, *Makahiki* Grounds of Nā'iwa, *Hula Piko* of Kā'ana, St. Joseph Church, and R.W. Meyer Sugar Mill of Kala`e.

Some residents are concerned that some sites that have not been formally identified are being damaged or destroyed by unregulated grading and development of land. Some Moloka`i residents feel that there is a lack of awareness and respect for the importance of Moloka`i's cultural and archeological sites, by locals and visitors alike, that often leads to intentional and unintentional damage.[11] In addition, neglected archeological sites, such as *heiau*, rock walls, and house platforms, are often damaged by animals or tree roots.

Many of the historic buildings in Kaunakakai remain along the town's main commercial corridor, Ala Malama Street. However a number of the wood, plantation vernacular style storefronts have been altered and character defining features removed. Maunaloa has suffered from wholesale demolition of laborer housing. Some twenty years after pineapple operations ceased in the 1970s, approximately 57 of the 200 plantation homes were demolished, and few wood plantation vernacular commercial buildings remain intact. Conversely, the original camp homes at Kualapu`u remain largely intact. A number have been altered, but the majority of the homes retain the character defining features of early twentieth century Hawaiian plantation laborer housing.

Moloka`i's cultural sites are actively used by many in the community for cultural, spiritual, and subsistence purposes and are important to the perpetuation of Hawaiian traditions and cultural practices. According to the *Governor's Moloka`i Subsistence Task Force Final Report*[12], among the random sample group surveyed 28% of their food is acquired through subsistence activities and 76% of respondents ranked subsistence as important to their own families. Erosion and reef siltation, over-fishing and improper harvesting, and non-native invasive marine species threaten traditional subsistence practices. Moloka`i has a wealth of traditional cultural practitioners with extensive experiential knowledge of local customs, resources, and ecosystems. Many of these practitioners believe it is their responsibility to teach younger generations traditional conservation practices and adherence to a code of conduct. This community place-based traditional resource management can function collaboratively with the more contemporary, resource management approach. One example is the 'Aha Moku initiative, a joint venture between the native Hawaiian community and the State to integrate the traditional cultural natural resource management system into existing government regulatory policy.

[10] U.S. Department of the Interior, National Park Service. (1998). *National Register Bulletin 38.*
[11] Chris Hart & Partners, Inc. January 2011. *Cultural Resources Issue Paper.* Prepared for the County of Maui Long-Range Planning Division, Wailuku, HI.
[12] Matsuoka, Jon K., Davianna P. McGregor, and Luciano Minerbi. June 1994. *Governor's Subsistence Task Force Final Report.* Prepared for the State of Hawaii, Department of Business, Economic Development and Tourism, Honolulu, HI.

B. ISSUES

Issue 1: Cultural, historic, and archaeological sites are vulnerable to destruction, theft, neglect, and environmental degradation.

Issue 2: Cultural and environmental degradation affects the ability of contemporary Hawaiian cultural practitioners to practice their traditional lifestyles, including subsistence practices.

C: GOAL, POLICIES, ACTIONS

GOAL **Moloka`i's cultural, historic, and archaeological sites and cultural practices will be protected and perpetuated.**

Policies

1. Require the identification and protection of sites prior to and during construction. Encourage on-site preservation of significant archaeological remains, rather than data recovery. Recognize significant native vegetation zones as cultural resources.

2. Encourage proper management, appropriate interpretation, and adequate access to significant cultural resources and sites.

3. Promote the rehabilitation, reuse, and registration of significant cultural resources, historic structures, and cultural landscapes.

4. Reduce the occurrence of costal dune grading and un-permitted grading and filling of wetlands, springs, fishponds and *loi*.

5. Where appropriate, require identification and mitigation of potential impacts to subsistence activities and resources when reviewing development permits and discretionary land use proposals.

6. Support access for subsistence hunting, fishing, and gathering.

7. Support protection of native Hawaiian rights customarily and traditionally exercised for subsistence, cultural, and religious purposes in accordance with the Hawai`i State Constitution (Article XII, Section 7) and Hawai`i law.

8. Support watershed or ahupua'a-based resource management partnerships.

9. Support the establishment of the island as a community-based subsistence fishing area pursuant to HRS 188-22.6.

10. Increase community awareness and stewardship of Moloka`i's historical and cultural resources.

11. Protect traditional cultural landscapes such as Hālawa Valley, 'Ualapu`e, Ka`amola, and Kamalo.

12. Encourage the use and rehabilitation of Moloka`i's fishponds.

13. Support the inclusion of educational programs that emphasize culturally significant arts and practices, the Hawaiian language, and Moloka`i natural history into the curriculum of Moloka`i schools.

Actions

Table 3.2 Heritage Resources Actions

No.	Action	Lead County Agency	Partners
3.2.01	Maintain an inventory of archaeological and historic resources assembled from existing inventories and databases to be used for project review. Establish archaeological and historic districts where high concentrations of sites exist.	Planning Department	SHPD
3.2.02	Provide education and incentives for property owners to nominate structures and sites to the State and National Register of Historic Places.	Planning Department	Real Property Tax
3.2.03	Develop a Public Access Management Plan.	Planning Department	Large landowners
3.2.04	Coordinate with cultural practitioners and state agencies to develop programs to educate the public on proper use and gathering of subsistence resources.	Environmental Coordinator	Cultural practitioners DLNR
3.2.05	Develop educational materials about impacts from coastal dune grading and un-permitted grading and filling of wetlands, springs, fishponds and *loi*, and provide instructions for reporting un-permitted activities. Cross-train existing DSA personnel on Moloka`i to be able to immediately respond to complaints regarding grading regulations.	Public Works	Planning Department
3.2.06	Establish an historical interpretive center at Mālama Cultural Park.	Parks Department	Planning Department SHPD
3.2.07	Explore establishment of Kawakiu Nui and Pu'u o Kaiaka as cultural preserves and development of a preservation/interpretive plan for these areas.	Planning Department	SHPD Molokai Ranch
3.2.08	Implement a community curatorship program, site reconstruction and interpretation project at Kaulukukui o Lanikaula.	Planning Department	SHPD Pu`u O Hoku Ranch
3.2.9	Implement a comprehensive historical interpretive program which includes historical markers, maps and brochures to identify significant historical and legendary sites that are appropriate for public interpretation.	Planning Department	SHPD

3.3 SCENIC RESOURCES

Scenic views and scenic view corridors are abundant and diverse on Moloka`i. Scenic views combine land, sky, sea, and historic structures at a variety of scales and locations: urban, rural, agricultural, or open natural spaces. Views of nature - ocean, hill slopes, valleys, ridgelines or coastlines – are seen nearly continuously from roadways that cross the island or follow the coast. *The Maui County General Plan 2030 Scenic & Historic Resources* report provides guidance on visual quality ratings based on eleven factors.[13] These factors will be used to evaluate and prioritize the scenic resources.

Existing Conditions

Currently the scenic resources on Moloka'i benefit from compact development within vast areas of open space, agricultural lands, forested mountains, historic landscapes and ocean coastline. The ridgelines and higher elevation hill-slopes are not developed.

For Moloka`i, a photo inventory of scenic resources was conducted and mapped but not rated for resource value. Inventory and mapping work has not occurred to implement the Scenic Roadway Corridors Management Plan and Design Guidelines.

B. ISSUES

Issue 1: Scenic resources are vulnerable when not identified.

Issue 2: Most scenic resources can not be restored once changed.

C. GOAL, POLICIES, AND ACTIONS

Goal: **Preserve and protect Moloka`i's diverse scenic resources for future generations.**.

Policies:

1. Restrict or mitigate development's impact to scenic resources.
2. Ensure development is designed to protect scenic roadway views, and significant view corridors and view-sheds.

[13] Chris Hart & Partners, Inc. (June 2006). *Maui County General Plan 2030 Scenic & Historic Resources, Inventory & Mapping Methodology Reports* (County of Maui Long-Range Planning Division).

3. Ensure development is designed to protect significant views of ridgelines and hill-slopes to maintain open space scenic character.

4. Increase community awareness and appreciation of Moloka`i's scenic resources.

Actions:

Table 3.3 Scenic Resources

No.	Action	Lead County Agency	Partners
3.3.01	Develop best management practices for development to protect identified priority view corridors or viewsheds. Integrated scenic resource planning into natural and heritage resources strategies and plans.	Planning Department	NGOs
3..3.02	Complete the visual inventory, analysis, and mapping of key scenic view corridors, ridgelines, and view-sheds, including a variety of built and natural features.	Planning Department	NGOs
3..3.03	Implement the Scenic Roadway Corridors Management Plan and Design Guidelines.	Planning Department	NGOs
3..3.04	Provide education workshops for design consultants and developers on Moloka`i scenic best management practices.	Planning Department	NGOs

4 | HAZARDS

Hazards from natural forces have been measured in Hawai`i since the early 1800s. Yet within communities there is limited preparation for, and knowledge of, the different types of hazards and their associated risks. In 2002, the U.S. Geological Survey (USGS) published the Atlas of Natural Hazards in the Hawaiian Coastal Zone that compiled the historical trends and natural factors that influence whether a site is vulnerable to hazards. The USGS report cautions that:

> …given the small size of Hawai`i State, an area that does not have a prerecorded history of a natural hazard occurrence does not preclude it from being affected in the future.[1]

In the USGS report, the 1946 tsunami was recorded as hitting eight locations around Moloka`i, ranging from 44 feet by Moomomi to two feet at Kaunakakai. The historical records provide an estimated recurrence cycle of every 23 years for a damaging tsunami reaching Moloka`i and Lāna`i. However, it had been over fifty years between the last damaging tsunami on Moloka`i in 1957 and the two recent tsunamis generated by earthquakes in Chile (2010) and Japan (2011).

Nationally, the topic that is challenging disaster recovery workers is how to build resiliency – the bounce-back capabilities – into communities. First, people must recognize the inherent risks involved in their choices of where and how to live. Then the community "adopts approaches that eliminate, reduce, mitigate or transfer those risks in ways that make them more manageable over the long haul"[2].

Recent resilience studies have found the following:

> Communities with strong disaster resilience capabilities were often those that were already doing well at the things citizens and businesses most value – having leaders that people trust and institutions that work, having a healthy environment, having a regularly maintained infrastructure designed to anticipate stresses, and having a flexible economy that provides opportunities for broad cross-sections of workers and investors.[3]

Hazard mitigation plans seek to reduce risk to people and property from natural and human created hazards, as well as reduce the financial impact of disasters. The 2010 Maui County Multi-Hazard Mitigation Plan[4] covers the natural hazards (tsunamis, hurricanes, flooding, et al.) identified in the USGS report and several additional hazards - dam failure, drought, wildfire, and hazardous substances. Hazard mitigation planning is the process that analyzes a community's risk from natural hazards, coordinates available resources, and implements actions to reduce risks. Natural hazards must be considered when planning for the future. Moloka`i's shorelines, beaches, and near shore coastal waters are highly susceptible to damage from coastal hazards such as tsunamis,

[1]Fletcher, et al. (2002) *Atlas of Natural Hazards in the Hawaiian Coastal Zone* (United States Geological Survey)
[2]Brown, Ben. (December 2010) *What is Resilience? A Roadmap to Resilience: Towards a Healthier Environment, Society and Economy for South Alabama. A Report by the Coastal Commission of Alabama.*
[3]Ibid.
[4]Martin & Chock. (2010) *Maui County Multi-Hazard Mitigation Plan*.

storm surge, and erosion. Inland areas can sustain wind damage, flooding, fires and drought. These dangers pose a significant threat to life and property. Coastal flooding, marine inundation and coastal erosion in particular are predicted to be exacerbated by climate change related to sea level rise (SLR).

Currently, the 2010 Maui County Multi-Hazard Mitigation Plan is being updated and will include information on hazard events that have impacted the County since the 2010 Plan was published as well as more information on the potential impacts of climate change and sea level rise. The 2015 Hazard Mitigation Plan will also focus on mitigating the impacts of flooding in order to improve the County's current Community Rating System class ranking of 8 which currently provides a 10% annual discount off flood policy premiums. Additionally, the County is in the process of updating the Flood Insurance Rate Maps (FIRMs) which will have a direct effect on the cost and who will be mandated by FEMA to purchase flood insurance.

Climate Change and Hazards

Scientists agree that the climate is changing to a warmer earth based on an extensive body of scientific studies. How much and how fast the climate will change for different areas is still being fine-tuned with additional measurements and studies. Sea level has been rising in Hawaii with varying rates. Some of these changes are already measurable in Hawaii and the Pacific Islands such as rising sea levels, increasing ocean acidity, increasing water and land temperatures, and changing rainfall patterns. There is a range of projections from 10 inches to 6.6 feet by 2100. Other changes may need a longer period to establish a long-term trend but early measurements indicate decreasing base flow in streams, changing wind and wave patterns, and changing habitats and species distribution.

Signed into law in 2014, the "Climate Adaptation Initiative Act" (Act 83) establishes an interagency climate adaptation committee to develop a sea-level rise vulnerability and adaptation report addressing statewide impacts to 2050. The interagency committee of county and community representatives will be overseen by the Land and Natural Resources Department (DLNR) and the Hawaii State Office of Planning, to assess and make recommendations about how best to prepare for rising sea levels and their secondary effects. The committee is required to issue a report that will be available to the public before the end of 2017. Act 83 also authorizes the Office of Planning to coordinate the development of climate adaptation plans and policy recommendations and to use the committee's report as framework for addressing other climate threats and climate change adaptation priorities.

Future accelerated sea level rise is expected to alter the frequency and severity of wave inundation, erosion and flooding events. Moloka`i residents living close to the shoreline pose particular challenges for hazard planning and adapting to Sea Level Rise (SLR). The predicted impacts from SLR include increased coastal erosion, (retreat), coastal bluff/cliff failure, groundwater table elevation, storm surge and inundation of low-lying areas. This will increase the likelihood of property damage, and community exposures to hazards, such as high drought conditions and higher risk for wildfires.

Existing Conditions

Extensive areas of Kaunakakai and the east-end communities are located at low coastal elevations, placing these communities at relatively high-risk from tsunami, stream flooding, storm surge, inundation and coastal flooding dangers. Areas of the tourist resort at Kaluakoi and the entire campground located at Papohaku Park are also located in these tsunami inundation zones. Climate change increases the hazardous effects of tsunamis and storms primarily by sea level rise (SLR) bringing the shoreline inland. Sea level rise also increases beach and shoreline erosion and can increase saltwater intrusion in parts of the aquifer and cause the groundwater table to rise resulting in the inundation of low-lying areas and infrastructure (Rotzoll & Fletcher 2013). Hazardous conditions that are increasing significantly over time are those effected by human activities - wildfires, hazardous waste, and impacts from climate change.

For hazard evacuations, Moloka`i has four shelters with a capacity of 4,412 people. Three shelters are rated for tsunamis and three for tropical cyclones. A State of Hawaii Civil Defense facilities survey found recurring deficiencies with existing shelters, particularly the penetration of windows by wind borne debris and weak doors (Martin & Chook, 2010)[5].

For disaster warning, there are 11 warning sirens on island. Eight warning sirens are located on the south shore, one is on the Kalaupapa Peninsula, one is in Maunaloa and one is located in the West End. An additional six sirens are planned for Moloka`i as part of the Statewide Modernization and Upgrade Plan. Sirens have an effective average range of one-half mile. In addition to the warning sirens the County of Maui Civil Defense Agency also transmits warning to the public through the Emergency Alert System (EAS), which consists of simultaneous broadcasts over all radio and television systems; the Civil Air Patrol for coastal warnings; and text and email to Civil Defense Notifications and Emergency Alert subscribers. Disaster response is coordinated through the County of Maui Emergency Operation Center on Maui and the Moloka`i Incident Command Post, with communications augmented through satellite.

Flooding and Erosion – Annual storms (such as Kona storms and tropical cyclones) can bring multiple hazards that impact coastal areas, as well as inland areas. These impacts can include flash floods, high waves, storm surge, high winds and hurricanes. Sea level rise increases the effect of high waves and storm surge that contribute to beach and shoreline erosion and coastal inundation. Major flood problems are associated with the heavy flow of four water courses in East Moloka`i – the Wailua Stream, Wawaia Gulch, Kamalo Gulch and Kawela Gulch – blocked by inadequate bridge openings or deposits of eroded sediment. Rising sea levels will also block the drainage of streams causing overflow at the stream mouth.

Tsunami - Up to May of 2010, twenty-seven tsunamis with run-up heights greater than 3.3 feet (1 meter) have made landfall in the Hawaiian Islands during recorded history and 8 have had significant damaging effects on Maui, Moloka`i or Lanai. Tsunamis in the Hawaiian archipelago have commutatively killed the largest number of people of all natural hazards affecting the islands. Tsunamis reaching Moloka'i have exhibited tremendous variability in terms of run-up heights, inundation distances, and the damage they have inflicted. During the April 1, 1946 tsunami on Moloka`i, run-up heights of 7 and 44 feet on the east and west sides of Kalaupapa Peninsula, respectively.

[5]Martin & Chock. (2010) *Maui County Multi-Hazard Mitigation Plan*.

Dams and Reservoirs - Dam and reservoir failures can cause can cause flash floods. The sudden release of impounded water can occur during a flood that overtops or damages a dam or reservoir it can occur on a clear day if the dam has not been properly constructed or maintained. Central Moloka`i has one dam, Kualapu`u Reservoir built in 1969 that is rated as a high hazard potential for causing flash flooding. The rating of 'high' means that a dam failure will most likely cause five or more deaths and excessive property damage to the community, industry and agriculture.

Wildfire -" Wildfire" is the term applied to any unwanted an unplanned fire burning in forest, shrub or grass regardless of whether it is naturally or human induced. Within Maui County, Moloka`i seems to be the most susceptible to wildfire. There were nine years on record where 1,000 plus acres were burned. Between 1975 and 2009, wildfires on Moloka`i have burned over 65,000 acres, approximately twice the acreage as fires on Maui in the same time period. Wildfire has been devastating to ecosystems as well as communities on Moloka`i. Nine out of ten wildfires are human caused and pose a high risk to human life, property, and natural resources. Moloka`i's central area and west end are dry regions, with the agricultural lands particularly susceptible to drought conditions, and at high risk of fire. There are economic, environmental, and social impacts that result from wildfires. Economic impacts include diminished real property values, loss of retail sales and associated relocation expenses. Environmental impacts include the serious risk to endemic and introduced flora and fauna and contamination of hydrological resources. Social impacts due to wildfires include health related problems related to smoke inhalation, disruption of activities related to the tourist industry and damage to archeological sites.

Hazardous Substances & Waste - The 1986 Superfund Amendments and Reauthorizations Act (SARA) includes guidelines for federal, state, and local governments on emergency planning and providing communities with information on hazardous chemicals within their jurisdiction. There are five Superfund sites on Moloka`i that are on the State Department of Health's Priority List of Sites that have potential or known hazardous substance or petroleum contamination. Four of the sites are within Kaunakakai and one is at Ho`olehua. The County of Maui Emergency Response Notification List also monitors one of the State sites, Ho`olehua, where 42 abandoned drums were discovered during land clearing. The substance within the drums and the soil is unknown (Martin & Chook, 2010)[6].

B. ISSUES

Issue 1: There is low public awareness and involvement related to hazards preparedness, mitigation, response, and recovery.

Issue 2: In coastal areas sea level rise will increase inundation, flooding, and storm surge risk to development, as well as cause beach erosion and shorelines retreat.

Issue 3: Moloka`i has a high risk of wildfires.

[6]Martin & Chock. (2010) *Maui County Multi-Hazard Mitigation Plan*.

C. GOAL, POLICIES, ACTIONS

GOAL **Moloka`i will be prepared for natural and human-created hazards.**

Policies

1. Promote public education and involvement on all natural and human-related hazards, including climate change related hazards, to increase preparedness and response and to reduce hazard risk and impacts.

2. Support a more coordinated emergency response system that includes clearly defined and mapped evacuation routes and shelter facilities located away from areas susceptible to natural hazards.

3 Support and advocate for better preparedness capacity by improving inter-agency planning, coordination, and implementation.

4. Support the integration of science based coastal hazards information into land use planning and permitting, including revision of the Special Management Area (SMA) boundary, in accordance with Hawaii State Planning Act Priority Guidelines.

5. Require during the entitlement and permitting process, that shoreline development analyze shoreline hazards, including erosion and sea level rise. Maximize the protection of coastal natural resources and ecosystems. Avoid the perpetuation of shoreline armoring.

6. Encourage the location all critical infrastructure, facilities, and Capital Improvement Projects out of the evacuation and inundation zones vulnerable to coastal hazards in accordance with Hawaii State Planning Act Priority Guidelines.

7. Coordinate with Federal, State and County agencies to obtain current sea level rise information and maps. Plan phased relocation of critical structures, roadways and long-term strategic retreat of buildings, and adequate setback of new development. Identify priority planning areas where resources and planning efforts need to be focused and identify how and where to use adaptation strategies such as retreat, accommodation, and protection.

Actions

Table 4.1 Hazards			
No.	**Action**	**Lead - County / Other**	**Partners**
4.01	Continue development of Moloka`i Incident Command Post in coordination with the County of Maui Emergency Operations.	Civil Defense	Red Cross Civil Air Patrol Police Department Fire and Public Safety
4.02	Identify and submit projects that would qualify for funding under the FEMA Pre-Disaster Mitigation Program, Hazard Mitigation Assistance Program, NFIP Severe Repetitive Loss Program and other FEMA funded mitigation and NFIP grants.	Civil Defense	FEMA Region IX
4.03	Distribute information on hazard-mitigation: ▪ Disaster planning, evacuation routes and formalized evacuation plans, and shelter location; ▪ Steps that homeowners or businesses can take to strengthen and harden their buildings against natural and human related disasters; ▪ Wildfire prevention; and ▪ Household and small business best management practices for toxics (heavy metals) and hazardous waste disposal (include pharmaceuticals).	Civil Defense	Fire Department Mayor's Office - Environmental Coordinator Red Cross
4.04	Seek community information on possible hazardous waste sites buried decades ago; investigate, and use remediation when needed.	Department of Environmental Management	State DOH Mayor's Office (Environmental Coordinator)
4.05	Identify critical infrastructure, lifelines, roads, and structures that are vulnerable to coastal hazards, including sea level rise, and develop a more coordinated emergency response system of well-defined and mapped evacuation routes. Distribute emergency response information at camping sites and through school programs.	Civil Defense	DPW DWS DEM
4.06	Identify critical infrastructure, lifelines, roads, and structures that are vulnerable to wildfires and develop a more coordinated emergency response system of well-defined and mapped evacuation routes. Formalize existing practices on the use of heavy equipment during fires. Develop a wildfire information campaign and signage to build public awareness of wildfire hazard.	Fire and Public Safety	DLNR- DOFA Volunteer Fire Crew (State trained) Moloka`i Fire Task Force
4.07	Improve community awareness of the human, economic, and environmental costs associated with wildfires to prevent those wildfires caused by negligence or accident. Engage the community in creating or maintaining fire	Fire and Public Safety	Moloka`i Fire Task Force

	breaks and providing education to other community members.		
4.08	Map Sea Level Rise projections for specific geographic areas on Moloka`i, utilizing data from the National Oceanic and Atmospheric Administration (NOAA) Digital Coast SLR and Coastal Flooding Impacts Viewer. Map other climate related coastal hazard areas.	Planning	NOAA Pacific Services Center, UH Sea Grant
4.09	▪ Continue work with FEMA to update FIRMs that incorporate best - available information on climate change and SLR. ▪ Implement additional Community Rating System (CRS) activities to improve the CRS class ratings to receive annual discounts on flood insurance premiums.	Planning	FEMA
4.10	Update coastal planning set back requirements to factor in incremental effects of rising sea levels.	Planning	

5 | ECONOMIC DEVELOPMENT

Key economic events have shaped the structure and vitality of Moloka`i's economy and in turn have influenced the population makeup and employment on the island. Moloka`i has a long history of agriculture, beginning with the cultivation of taro and development of fishponds by the Native Hawaiians. In 1859, Kamehameha IV established a sheep ranch at Kaluakoʻi which was the origin of Moloka`i Ranch. In the 1920's, the first pineapple plantations were established and the island experienced an influx of immigrant workers. Various other agricultural crops have been commercially produced on Moloka`i including sugar, honey, sweet potatoes and watermelon. In the late 1970's, the Kaluakoʻi Hotel along with its golf course and condominiums opened, officially introducing resort tourism to Moloka`i. By the early 1980's, the pineapple operations closed ending plantation agriculture on Moloka`i and triggering a substantial out-migration of Filipino and other non-Hawaiian population.

In 2000, two biotech seed corn companies began operations that are now Moloka`i's first and second largest private employers. In 2001, the Kaluako'i Hotel closed; then in 2008 the island's largest employer at the time, Moloka`i Ranch, closed operations and laid off 120 employees. This also meant the loss of some important community amenities such as the Kaluako'i golf course, a gas station, a movie theatre complex and a rodeo arena.

In an effort to find solutions to the island's economic challenges, the Maui Economic Development Board (MEDB) and the Moloka`i Chamber of Commerce surveyed ninety Moloka`i business representatives. The resulting 2009 report concluded that, "… the quality of the labor force and job applicants was a limiting factor for the Moloka`i economy."[1] Education levels, job skills and a shortage of local managerial talent were cited as contributing factors. In spite of these discouraging findings, MEDB also found that "…entrepreneurship is thriving on Moloka`i and that resourcefulness is inherent in the community."[2]

A. EXITING CONDITIONS

Hawaii's economic development efforts face a unique set of challenges including:

- ✓ Limited local market capacity and competition due to the small, isolated population.
- ✓ Higher costs and limited product transportation options.
- ✓ Over-reliance on fossil fuel based imports for energy production and transportation of people, food and materials.

[1] Maui Economic Development Board, *Entrepreneurship and the Future of Moloka`i* (2009)
[2] Maui Economic Development Board, *MEDB Annual Report On Operations, July 1, 2008 – June 30, 2009*

These economic challenges are magnified on Moloka`i; finding workable solutions will require thoughtful collaboration between business owners, major landowners, government entities, and the community.

The USDA awards grant to communities throughout the United States that have high rates of poverty and Moloka`i has been designated one of these Rural Enterprise Communities for years. Moloka`i is economically disadvantaged due in part to the lasting combined impacts of the Great Recession and the shutdown of Moloka`i Ranch. The following statistics provide a snapshot of recent economic conditions of Moloka`i[3]:

- Moloka`i has consistently had the state's highest unemployment rate; in November 2014 it was 14.2% versus the statewide average of 4.7%.[4]
- The 2009-2013 estimated median family income (MFI) for East Moloka`i was of $51,807 - 65% of the $79,963 statewide MFI; West Moloka`i MFI was $44,656 - 56% of the statewide median.
- An estimated 21% of people living on Moloka`i had incomes below the poverty level, which was nearly double the statewide rate of 11%.
- On Moloka`i, 28% of workers were employed in the government sector compared to 15% on Maui, and 21% statewide. Alternatively, Moloka`i had the lowest percentage of private-sector employees at 63% compared to 75% on Maui, and 72% statewide.
- Moloka`i had the highest percentage of workers employed in the agricultural, forestry and fishing industries at 7% compared to Maui at 2.4% and the state average at 1.5%.
- Since Moloka`i has only one small hotel and 340 total visitor accommodation units that are mostly condos, the island has the lowest percentage of workers employed in the tourism sector with 15% versus 24% for Maui and 16% statewide.

Standard economic indicators such as unemployment rate, workforce composition, and personal income levels may signify a community in distress; however, Moloka`i has a significant subsistence economy which provides a vital and viable substitution for many imported goods. This key sector in Molokai's hidden economy is important to food sustainability and self-sufficiency.

A number of residents are very protective of their rural and traditional-based lifestyles and have resisted economic development centered on commercial tourism, real estate development, and in-migration of new residents which are all important elements in most of the state's economic development strategies. Although many Moloka`i residents are willing to accept economic tradeoffs in order to maintain their traditional lifestyles, others desire a more diversified, resilient, production and service-based economy. There is considerable community support for agriculture, aquaculture, and an active community-based tourism sector. Many would like to see small local businesses and entrepreneurs become the primary drivers of Moloka`i's economic renaissance. There is also a

[3] American Community Survey, 2009-13 5-year Estimate (unless otherwise noted).
[4] Hawaii State Department of Labor& Industrial Relations (DLIR), December, 2014

strong community desire to revitalize and reopen the Kaluakoʻi Hotel, the Maunaloa Lodge, the golf course and the other amenities.

B. ISSUES

Issue 1: Moloka`i's weak economic base has been unable to provide a sufficient level of employment to meet the needs of residents.

Issue 2: Transportation between Moloka`i, the neighbor islands, and the mainland is expensive, inconvenient, and not conducive to economic development.

Issue 3: Limited pool of qualified, well trained workers reduces local employment potential and makes recruitment of new business more challenging.

C. GOAL, POLICIES, ACTIONS

GOAL **A stable, diversified, and sustainable economy that is compatible with Moloka`i's rural island lifestyle.**

Policies

1. Support diversification of Moloka`i's economy.
2. Support improvements in education and training programs at all levels to ensure a well educated and well trained workforce.
3. Support the development of scalable sustainable agriculture and value-added agricultural products.
4. Support small business assistance and training programs.
5. Support expansion of complementary tourism markets including kama`aina, cultural, eco, agricultural, sports, and hunting.
6. Support redevelopment of Kaluako'i Hotel and the Moloka`i Ranch Lodge.

7. Support the growth of permitted alternative lodging units such as bed and breakfasts, small inns, and guest houses.

8. Advocate for Moloka`i's interests with shippers, airlines, and regulators.

9. Encourage the State Department of Transportation's implementation of commercial harbor improvements.

10. Encourage the State Department of Transportation to expedite expansion and improvement of the airport.

Actions

No.	Action	Lead County Agency	Partners
5.01	Create a Rural Communities Economic Development Specialist to address Moloka`i's economic development challenges and opportunities.	OED	Maui Economic Opportunity (MEO)
5.02	Identify, target, and recruit new industries and businesses such as tv/film production/post-production, agricultural operations, aquaculture, and information technology.	OED	MEO
5.03	Partner with MEO's Small Business Development Program to provide business education workshops and loan programs on Moloka`i.	OED	UH Maui College MEO
5.04	Update/implement the Moloka`i Responsible Tourism Initiative.	OED	Maui Visitor's Bureau - Moloka`i chapter
5.05	Assess potential shipping options including utilizing the ferry as a small cargo carrier between Maui and Moloka`i.	OED	Ferry Operators Public Utilities Commission
5.06	Work with inter-island airlines to keep airfares affordable and service frequency adequate to accommodate the needs of Moloka`i visitors, residents, and businesses.	OED	Airlines Shippers Public Utilities Commission
5.07	Develop an Agriculture Strategic Plan for Moloka`i focusing on both larger agri-businesses and small farms.	OED	University of Hawaii (UH) College of Tropical Agriculture and Human Resources (CTAHR)
5.08	Provide business courses to farm owners and agricultural entrepreneurs that include education about State and Federal loan and grant opportunities.	OED	Department of Agriculture Farm Service Agency Hawaii

6 | LAND USE AND HOUSING

Land use refers to the way in which we use and mange land – whether for agriculture, environmental preservation, recreation, business, or housing. Land use policies and practices help to ensure an adequate and affordable supply of housing by designating where housing can be built in relation to other uses. Land use and housing policies strive to ensure sustainable communities with a variety of housing opportunities proximate to jobs, services, parks, infrastructure, and transportation. This chapter sets the framework to create livable communities for Moloka`i's people while protecting agricultural lands, environmental resources, and the rural character of the island.

6.1 Land Use

Moloka`i is a rural island based on an agricultural economy. The island has three distinct geographic regions with small towns and dispersed rural settlement. The island has very limited commercial and tourism development. Moloka`i's settlement patterns have been greatly influenced by the establishment of plantation agriculture and ranching, the development of irrigation systems, and the 1921 Hawaiian Homes Commission Act. The visitor industry began on Moloka`i in the late 1960s with the opening of the Hotel Moloka`i and Pau Hana Inn in Kaunakakai, and on the west end with the Kaluako`i Hotel opening in 1977. The Pāpōhaku Ranchlands Subdivision, established in 1981 on the West End, signified the beginning of resort real estate development on Moloka`i.

A. EXISTING CONDITIONS

Moloka`i's current land use patterns are characterized by small towns surrounded by vast agricultural lands, rural homestead settlements, resort development at Kaluako`i, and scattered rural development along the island's southeast coast. Kaunakakai is the island's population and commercial center and the smaller towns of Kualapu`u, Maunaloa, and Ualapu`e are important service centers for those communities.

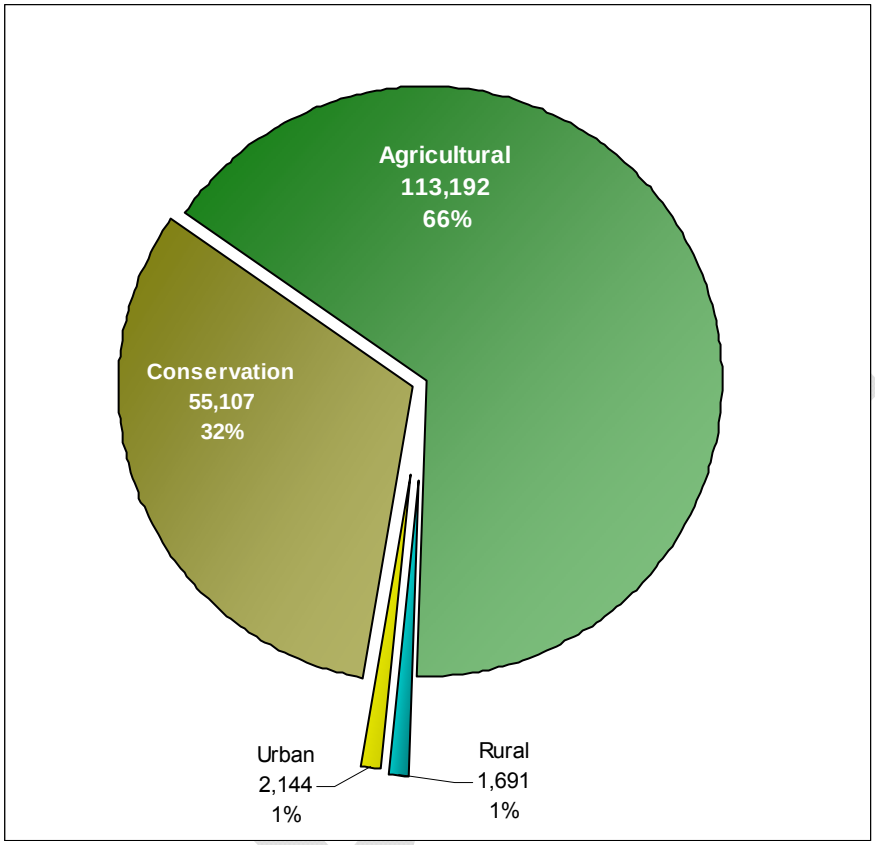
Table 6. 1: **Population of Moloka'i's Small Towns**

Town	2010 Population
Kaunakakai	3,425
Kualapu'u	2,207
Maunaloa	376
Ualapu`e	425

Source: U.S. Census Bureau, *2010 Census*

The vast majority of Moloka`i's lands are within the State's Agricultural and Conservation Districts, with only a small percentage designated as Rural and Urban (see Figure 6.1).

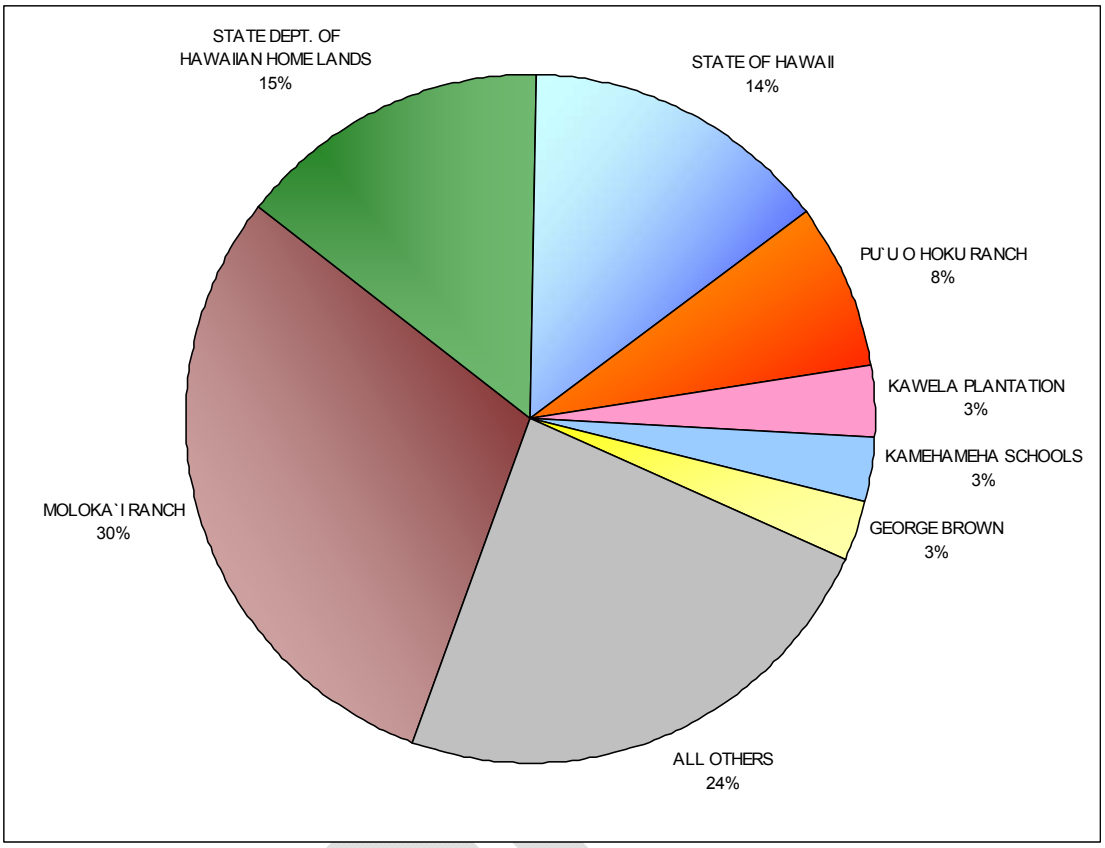
Figure 6. 1 Acreage by State Land Use District



Almost all of the land on Moloka`i designated Urban by the State Land Use Commission (SLUC) is County zoned Interim. The exceptions are those properties for which a zoning change has been granted. Interim zoning has significant consequences for landowners and businesses: 1) Interim zoning adds considerable time and expense to the land use permitting process; 2) Interim zoned property cannot be subdivided nor can conditional permits be granted; 3) commercial use of Interim zoned property is considered non-conforming since commercial is not permitted in the Interim District; and 4) Interim zoning allows densities and uses that are potentially undesirable in some areas.

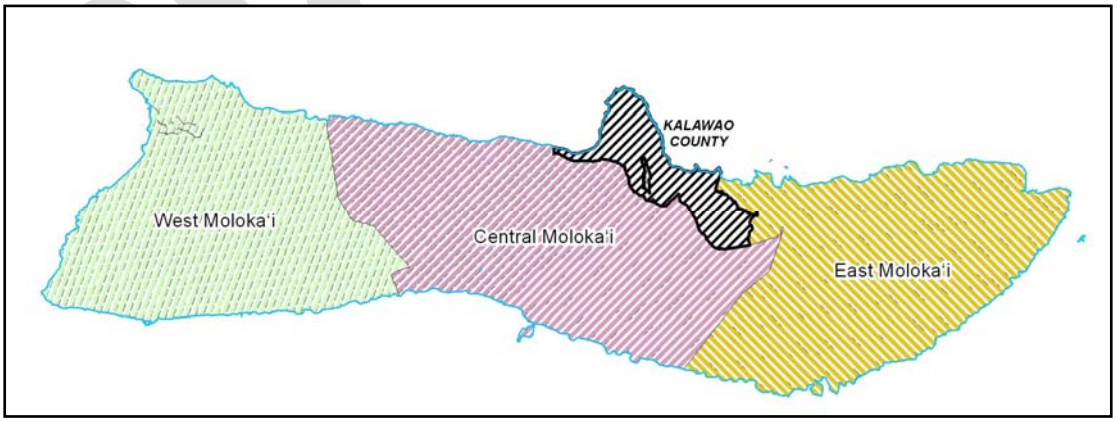
A majority of land is held by a few landowners and ownership patterns vary among the island's three regions (see Figure 6.2). West Moloka`i is almost entirely owned by Molokai Ranch. Central Moloka`i has large areas owned by the Department of Hawaiian Homelands (DHHL) and by Molokai Ranch, as well as smaller landowners. East Moloka`i is largely held by small landowners, except in the Halawa area, where Pu`u o Hoku Ranch has extensive property.

Figure 6.2 Acreage by Landowner (Island-wide)



Moloka`i's elongated shape embraces widely varying topographic and climatic regimes, which create three distinct regions – East Moloka`i, West Moloka`i and Central Moloka`i (see Figure 6.3)[1].

Figure 6.3 Moloka`i Regions



[1] Region boundaries follow Tax Map Key (TMK) lines.

East Moloka`i

East Moloka`ʻi is the island's most remote and sparsely populated region. East Moloka`i rises to the summit of Kamakou at 4,970 feet. This mountainous region has been sculpted by heavy windward rainfall creating the deep verdant valleys of Pelekunu, Wailau, and Hālawa. The primary land uses are conservation and cattle ranching, with small rural settlements along the southeast coast at `Ualapu`e, Pūko`o, Pauwalu, Waialua, and Hālawa. The southeast shore is also known for its historic fishponds, some of which are currently being restored.

Central Moloka`i

Central Moloka`i is a varied landscape of high verdant forested plateaus, rugged and gentle coastlines, and a dry central plain that when irrigated provides some of the most fertile agricultural lands in Hawai`i. Central Moloka`i includes Kaunakakai, the population (47% of total island population), commercial, and civic center of the island. Other population centers include the former plantation town of Kualapu`u and the Hawaiian homesteads at Ho`olehua. The island's primary industrial acreage is in the Moloka`i Industrial Park at Pala`au and near the shore in Kaunakakai.

Central Molokaʻi is also the island's "bread basket". Agricultural resources include approximately 11,500 acres of Prime ALISH designated agricultural lands, the Moloka`i Irrigation System, and the island's only State owned agricultural park, comprising 753 acres (see Map 6.1). Moloka`i's agricultural lands support the island's existing agricultural economy, provide the opportunity for subsistence agriculture, provide future opportunities for agricultural enterprises, and significantly contribute to the island's vast open space and rural character. While Moloka`i's agricultural lands are not under the level of pressure from encroaching urbanization like other areas in the state, implementing tools to protect these lands is a proactive step to ensure these resources are available for future generations.

West Moloka`i

West Moloka`i is on the hot and dry leeward side of the island. Its highest elevation is at Pu`u Nana, elevation 1,381 feet. Cattle ranching is the dominant land use in the region. Kaluako`i Hotel closed in 2001, followed by the opening of the Lodge at Molokai Ranch and the Molokai Beach Village Tent Cabins at Kaupoa Beach in 2002. However, despite efforts to make Molokai Ranch profitable, all of its West Moloka`i operations were shut down in 2008 and as a result economic activity and the visitor population in West Moloka`i have declined. Some condos and single-family homes remain in the Kaluako`i- Pāpōhaku area, and limited services remain in Maunaloa for the town's small population. Currently Molokai Ranch is pursuing animal husbandry, farming, renewable energy, and hospitality.

B. FUTURE CONDITIONS – PLANNED GROWTH

(To be developed during land use workshops with CPAC)

(see Appendices 6.1 and 6.2)

Land Use Planning Principles and Standards

1. **Protect ecological diversity, natural resources, culturally sensitive lands, and agricultural lands and avoid hazard-prone lands when defining future growth areas.** Moloka`i's ecology, natural, and cultural resources, and agricultural lands are important for both current and future generations.

2. **Protect open space and scenic landscapes**. Open space should be preserved to retain Moloka`i's rural character, and to separate and define distinct edges of communities. Scenic landscapes, viewsheds, and view corridors are integral to place identity and should be retained.

3. **Strengthen existing communities through infill and redevelopment.** Support revitalization of existing communities and infill development on underutilized infill lots, where appropriate.

4. **Promote equitable and livable mixed-use communities.** Moloka`i's small towns should provide a mix of housing types and affordability, compact and pedestrian-oriented development, access to parks and open space, and a mix of compatible and complementary land uses. Future growth areas will be contiguous or proximate to existing employment and/or housing; and located where infrastructure and public facilities can be provided in a cost-effective manner.

C. ISSUES

Issue 1: There is no comprehensive zoning map for Moloka`i and the existing zoning code and Interim zoned lands present significant obstacles.

Issue 2: The Special Management Area (SMA) boundary does not protect some areas of the near-shore environment and coastal resources.

D: GOAL, POLICIES, AND ACTIONS

GOAL: Moloka`i's land use pattern will protect agricultural lands, open space, and natural systems and support livable small towns and rural communities.

Policies

1. Ensure all lands are zoned for specific land uses and zoning standards are consistent with Community Plan policies.
2. Retain Kaunakakai as the population, civic, and commercial center of the island.
3. Limit resort development to the West End.
4. Support the revitalization of Maunaloa Town and Kaluako`i resort area.
5. Direct growth to vacant and underutilized infill lots and proposed expansion areas as shown on the Moloka`i Community Plan Land Use map (see Map 6._).
6. Limit urban zoning to areas designated for urban use on the Moloka`i Community Plan Land Use map (see Map 6._).
7. Where possible, site community facilities such as schools, parks, libraries, and community centers within walking and biking distance of residences.
8. Facilitate the provision of infrastructure and public facilities and services prior to, or concurrently with, development, including provision for on-going maintenance through district funding or other funding mechanisms.
9. Work with DHHL to coordinate land use, infrastructure, and public facility planning when feasible.

10. Establish a predictable and timely development review process to facilitate the approval of projects that meet planning and regulatory requirements.

11. Discourage developing or subdividing agricultural lands for residential uses where the residence will be the primary use and agricultural activities will be secondary uses.

12. Allow, where appropriate, the clustering of development on agricultural and rural lands when approved as a Conservation Subdivision Design plan or similar approval mechanism.

13. Encourage green belts, open space buffers, and riparian zones to minimize conflicts between agriculture, residential, and industrial uses.

14. Support expansion of the Molokai Agricultural Park as demand warrants.

15. Regulate land use in a manner which reaffirms and respects customary and traditional rights of Native Hawaiians as mandated by Article 12, Section 7, Constitution of the State of Hawaii.

16. Support the expansion of the State Conservation District boundary where warranted for environmental preservation and habitat enhancement.

Actions

Table 6. 2 Land Use

No.	Action	Lead County Agency	Partners
6.1.01	Adopt a comprehensive zoning map for Moloka`i. Conduct a comprehensive review of interim zoned lands to identify and adopt zoning that is consistent with the Community Plan.	Planning Department	
6.1.02	Amend the zoning code to facilitate the development of mixed-use, pedestrian oriented communities.	Planning Department	
6.1.03	Implement County responsibilities under Acts 183 (2005) and 233 (2008) to designate and establish Important Agricultural Lands (IAL) and the incentives therein.	Planning Department	
6.1.04	Review the SMA boundary and make changes as necessary to comply with the objectives and policies defined in HRS § 205A-2.	Planning Department	

6.2 Housing

Housing affordability is a significant issue throughout the County of Maui, and Moloka`i is no exception. Shortages of reasonably priced housing can contribute to high rates of crowding, lower ownership rates, and impact the overall quality of life within a community. Additionally, investment or second home purchases may increase housing prices if the properties are used as tourism rentals rather than owner-occupied or long-term rental homes.

Housing affordability can improve when residences are built near employment, services, and existing infrastructure. Mixed-use zoning allows residents to live near their workplace and reduces transportation costs. The ability of residents to purchase or rent can also improve when there is an accessory `ohana unit to provide rental income or to house family members. Housing development plans must address factors affecting affordability, community character, and special needs populations such as disabled residents and the frail elderly.

It is also important for new development to provide a variety of lot sizes, housing types, tenures and price points that accommodate the full spectrum of household compositions, life stages (i.e. single, married, with children, multigenerational, etc.) and income levels. Ensuring housing variety on Moloka`i will increase residents' ability to remain on island when family or economic circumstances change.

A. EXISTING CONDITIONS

The majority of the housing units on Moloka`i were built before 2010. Of these, more than half were built in the 1970s or earlier. Only 355 units were built on Moloka`i between 2000 and 2010. Central Moloka`i home construction peaked in the 1970s, while West Moloka`i construction peaked in the 1980s.[2]

Moloka`i's housing stock is predominantly single family units, which limits housing options and can present challenges when residents experience family or economic changes. The Existing housing stock includes 2,623 single family units and 879 multifamily units, for a total of 3,502 units.[3] The 2010 vacancy rate was 28%, slightly higher than on Maui Island (23%) and Lāna`i (25%). Moloka`i's household size is 2.92 persons per dwelling unit.[4]

Housing affordability is defined by the U.S. Department of Housing and Urban Development (HUD) as a household that pays less than 30 percent of its annual income on housing. By this standard, less than half of Moloka`i renters and home owners pay unaffordable rents or monthly ownership costs, indicating that housing is more affordable on Moloka`i compared to the rest of Maui County.

[2] County of Maui, Department of Planning. (October 2013). *Land Use Forecast Island of Moloka`i*.
[3] Ibid.
[4] U.S. Census Bureau, 2010.

Figure 6.4 shows that from 2007 to 2011, 49 percent of Moloka`i renters paid more than 30 percent of their household income for housing costs versus 53 percent of Maui County renters and 56 percent of renters statewide.[5]

Figure 6.4 Gross Rent as a Percentage of Household Income

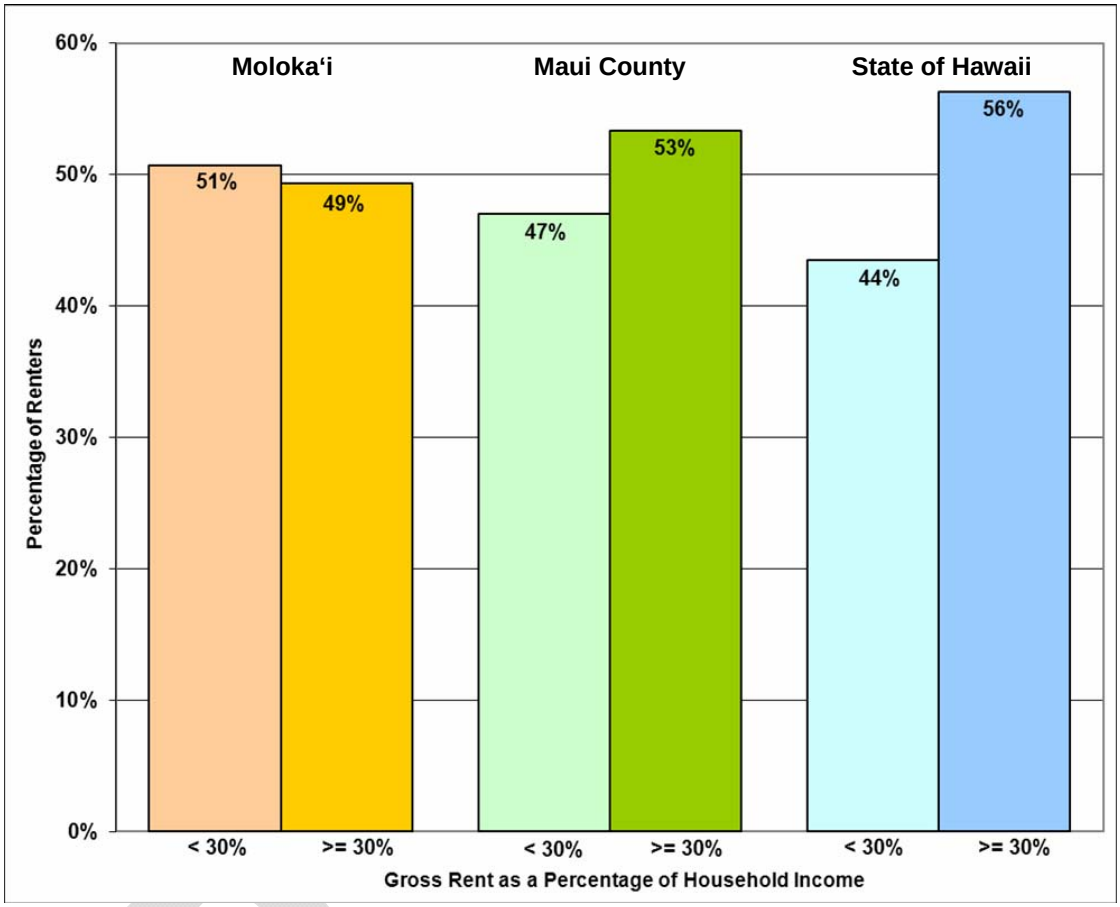
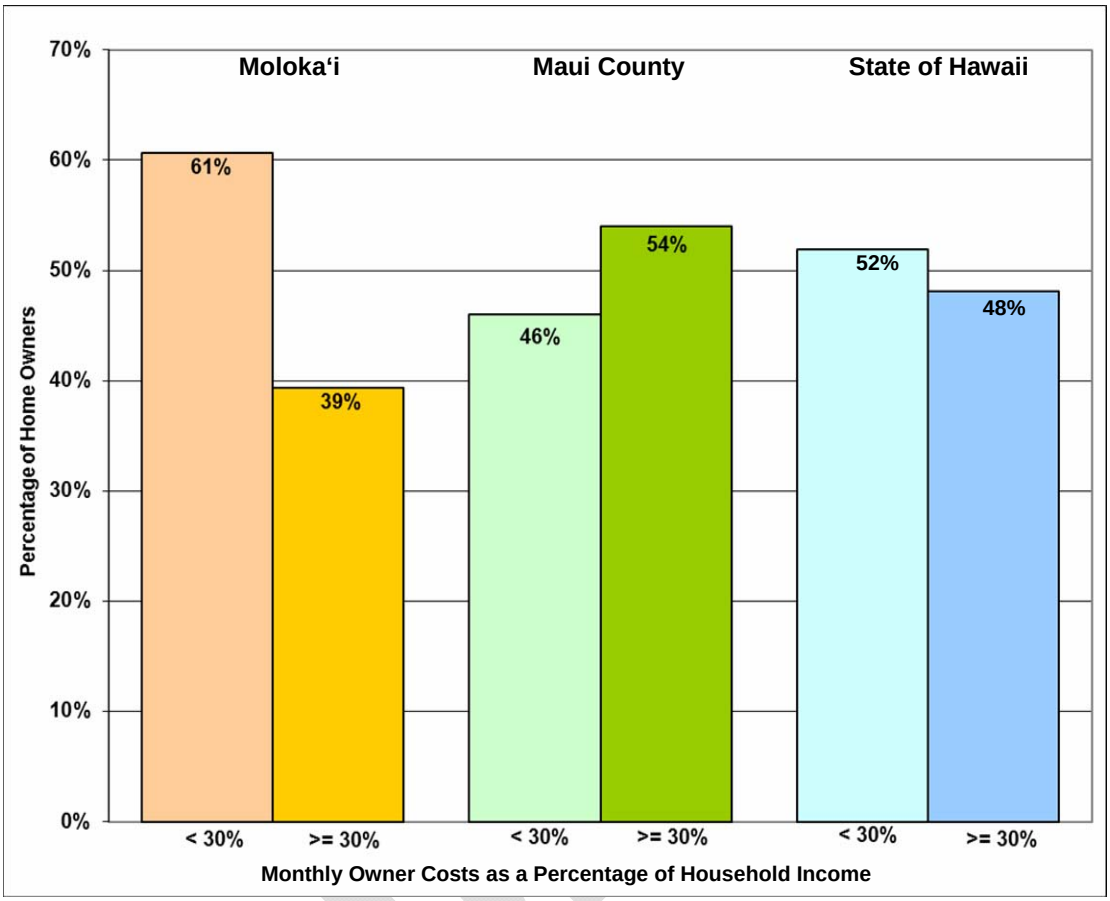


Figure 6.5 shows that from 2007 to 2011, 39 percent Moloka`i home owners with mortgages paid more than 30 percent of their household income for housing ownership costs versus 54 percent of Maui County home owners and 48 percent of owners statewide.[6]

There are several factors inhibiting the development of a long-term supply of affordable housing on the island including the weak economic base, high construction costs, few vacant lots with infrastructure in place, and lack of available financing.

[5] U.S. Census Bureau, *2009-2013 American Community Survey 5-Year Estimates*.
[6] Id.

Figure 6. 5 Monthly Owner Costs as a Percentage of Household Income



Currently three agencies are working to make affordable housing available on Moloka`'i: 1) the Department of Hawaiian Home Lands (DHHL); 2) the Moloka`i Affordable Homes and Community Development Corporation; and 3) Moloka`'i Habitat for Humanity. DHHL's planned total build out to 2025 for new lots is as follows: 422 new residential homestead lots and 350 new agricultural lots, located in Na`iwa, `Ualapu`e, Kamiloloa, Kapa`akea, Makakupa`ia, Kalamaula, and Ho`olehua.[7] Additionally, the County of Maui's Workforce Housing Ordinance requires developers proposing new development to provide a percentage of affordable housing.

Moloka`i has an aging population that requires special services and housing, and this need is projected to increase in the future. Moloka`i has one senior housing facility with approximately 85 units for low and moderate-income seniors; however there is no long-term residential care facility on the island. Moloka`i General Hospital can provide skilled nursing care and intermediate care, but it is neither equipped nor staffed to be a long-term residential care facility.

[7] Group 70 International. (June 2005). *Department of Hawaiian Homelands Moloka`i Island Plan*.

B. ISSUES

Issue 1: There is a lack of affordable housing and affordable residential building sites.

Issue 2: There is a lack of housing choices at different price levels and housing sizes.

Issue 3: There is an increasing need for housing and services for special needs populations.

C: GOAL, POLICIES, AND ACTIONS

GOAL: A diverse supply of housing for Moloka`i residents that is affordable, safe, and environmentally and culturally compatible.

Policies

1. Support regulations to maintain an adequate supply of affordable housing.
2. Require that County mandated affordable housing have a buy-back provision so these units will not be taken out of the affordable housing stock.
3. Maintain a supply of County subsidized affordable rental housing.
4. Encourage development of a mix of lot sizes and housing types (such assingle family, ohana units, duplexes, multifamily, and live-work units), to expand housing choices and price points.
5. Require, where practical, that new housing be developed in locations conducive to affordability - proximate to jobs, services, infrastructure, and public facilities.
6. Support the establishment of long-term residential care facilities and a diversity of appropriate housing opportunities for residents with special needs.
7. Encourage the establishment of a community land trust to improve access to affordable land and housing.

1 **Actions**

Table 6. 3 Housing Actions

No.	Action	Lead County Agency	Partners
6.2.01	Develop and implement a comprehensive affordable housing plan for Moloka`i.	Housing and Human Concerns (DHHC)	Moloka`i Affordable Homes and Community Development Corporation, Moloka`i Habitat for Humanity
6.2.02	Implement a housing rehabilitation program including loans, grants and/or technical assistance and community outreach.	DHHC	
6.2.03	Amend the zoning code to allow a greater variety of housing types, including mixed-use, mixed housing types, co-housing, prefabricated homes, and small lots.	Planning Dept.	
6.2.04	Provide assistance with securing / leveraging grants, Low Income Housing Tax Credits, and other resources that support affordable housing price points.	DHHC	
6.2.05	Form partnerships and develop a plan for establishing long-term care infrastructure on Moloka`i – including long-term and short-term supportive housing, palliative care and hospice facilities.	DHHC	State Dept. of Health Non-profits
6.2.06	Investigate whether Na Hale ‘O Maui, a community land trust on Maui, would consider operating on Moloka`i.	DHHC	Planning Dept. Na Hale ‘O Maui

2

7 | COMMUNITY DESIGN

Some of the most distinctive aspects of Moloka`i are its wide open spaces, small towns, varied landscapes, and architecture, which reflects both Hawaiian tradition and the island's plantation history. They collectively create an identity unique to Hawaii, perhaps best expressed in a sign commonly seen on the island – "Keep Moloka`i Moloka`i".

During several community plan workshops, many residents on Moloka`i voiced a desire to maintain and enhance this rural character and natural beauty. New growth will require special attention to ensure that the rural, historic character of Moloka`i's small towns is retained. Creating a county historic district in selected locations could help to address the loss of historic structures.

A. Existing Conditions

Moloka`i's rural character is reflected in its settlement patterns, housing, streetscapes, roadways, public spaces and the design of public institutions. Remnants of this era are found in Maunaloa, Kualapu'u, Ho`olehua, Kaunakakai, and parts of the east end. While Kaunakakai is compact and still retains its country town character, it could benefit from some careful design to enhance the natural beauty and improve its streets, and walkways. Unfortunately, the historic character of the streetscapes and buildings has been compromised by demolitions and lack of restoration.

One of the most important tools the County has to address this incremental loss of architectural history is the Country Town Business District Design Guidelines. These guidelines cover the small towns of Kaunakakai, Maunaloa, and Kualapuu along with the East End. Although the current version is over 20 years old, it is the only planning document to define site design, street design, and architectural design standards.

Despite slow growth over the past 30 years, many of Molokai's historic buildings have been significantly altered. As an example, the plantation-town character of Maunaloa was substantially altered when many of its plantation era homes were demolished. In addition, there is little commercial activity in the town, resulting in several vacant commercial buildings; there also are a number of undeveloped residential lots.

The rural landscape of the east end of Moloka`i is in some ways more intact, although there has been some concern (expressed in interviews and workshops) about the impact on the area by the growth of luxury vacation/second homes.

B: ISSUES

Issue 1: The rural and small-town character of Moloka`i' and its small towns is an essential part of the island's identity but could be compromised by new development that is out of scale and is visually incompatible.

Design Principles

Preserve and maintain the traditional features of the built and natural landscape that reflect Moloka`i's history and give the island its distinctive character. Some of the character-defining features include the wide open spaces between communities, unobstructed views of the ocean, access to the shoreline, and simple, understated buildings.

Encourage a mix of land uses in Moloka`i's small towns. Encourage a mix of commercial, residential, and service uses to strengthen the island's small towns, to reduce the need for travel, and to make efficient use of infrastructure.

**Preserve and enhance the historic character of Moloka`i.** Renovate historic structures as a way of maintaining Moloka`i's history. Design new buildings and other improvements to complement and enhance the town's historic character.

Develop a circulation system and facilities to accommodate a variety of travel modes - bicycles, pedestrians, buses, and vehicles.
Create a comprehensive network of travel options, with an emphasis on the pedestrian experience. Even as more areas are developed, they should be part of an island-wide transportation system that encourages and accommodates a variety of travel modes to serve both residents and visitors.

Maintain a pedestrian orientation in Moloka`i's small towns. Preserve and enhance sidewalks, parks, and other open spaces in small towns and other community areas to provide connectivity between land uses and offer a safe, inviting, and comfortable walking experience.
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C: GOALS, OBJECTIVES, AND ACTIONS

GOAL **The rural character of Moloka`i's country towns and the island's open spaces will be maintained and enhanced.**

Policies

1. Continue to use the Business Country Town Design Guidelines to ensure that the island's historic and rural character is maintained.

2. Encourage the preservation of buildings, structures, and sites of historic and cultural significance.

3. Encourage the revitalization of Kaunakakai to encourage business development, enhance its historical character, and strengthen the town's connections to the waterfront.

4. Promote and support projects that create a pedestrian-friendly environment with street trees, benches, and other features that encourage people to frequent Kaunakakai.

5. Maintain and enhance the rural character of the Kaluako`i area through low-impact site design and development practices.

6. Encourage a thorough review of project's building size, scale, mass, materials, color, and other architectural features to ensure compatibility with its context.

7. Encourage creative innovative approaches to site design, subdivision layout, and architecture to maintain the island's rural character and to protect coastal areas, natural resources, and cultural/historic resources.

8. Concentrate future growth in and around existing development to avoid sprawl and to minimize the cost of infrastructure development.

9. Promote the use of sustainable building and development practices such as the Leadership in Energy and Environmental Design (LEED) standard.

10. Encourage the use of native, non-invasive and drought tolerant plants.

1

Table 7.1 Community Design

No.	Action	Lead County Agency	Partners
7.01	Update the 1993 Moloka`i Country Town Business Design Guidelines.	Planning Dept.	
7.02	Develop sub-area development plans for: Maunaloa, Kaluakoi Kualapu`u / Ho- olehua, and the East End of Moloka`i.	Planning Dept.	
7.03	Establish guidelines or other methods to ensure that new development maintains and enhances its rural character, natural beauty, views and viewpoints, and protects historic sites.	Planning Dept.	
7.04	Develop a pedestrian linkage between Malama Park and Kaunakakai through streetscape improvements.	Planning Dept.	Parks Dept. Dept. of Land and Natural Resources
7.05	Develop and adopt rural and small town street design standards that are appropriate for Moloka`i.	DPW	Planning Dept.
7.06	Create a funding source or mechanism for small business owners to renovate businesses in the island's small towns.	Office of Economic Development	Planning Dept.
7.07	Develop incentives promoting the use of sustainable green building and development practices.	DPW	Planning Dept.

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8 | INFRASTRUCTURE

Safe, reliable and efficient hard infrastructure and utility systems are critical to the economic vitality and quality of life on Moloka`i. Roads, bridges, harbors, airports, water, wastewater, solid waste, energy, telecommunications and public transit systems provide necessary support for modern life on the island. Responsibility for the installation, operation and maintenance of these systems on Moloka`i is shared between a number of public and private entitles. Planning for the installation of new systems and the replacement of deteriorating systems may require coordination among these entities as well as the identification of additional funding sources since County Capital Improvement Program budgets are already strained. Consideration should be given to locating future development near existing infrastructure to leverage prior capital investments and to minimize the high cost of installing new systems.

Climate Change and Infrastructure Systems

Sea level rise and the associated coastal impacts have the potential to harm an array of infrastructure and environments in Moloka`i including: low lying coastal roads, docking facilities in harbors, water supply and wastewater systems In many cases these impacts will stress an already ailing infrastructure. Wastewater systems, stormwater infrastructure, water supply and energy facilities are located in low lying areas in close proximity to the coast. Water supply faces threats from both rising groundwater and saltwater intrusion in wells, as well as declining quality and quantity due to drought and downward trends in groundwater base flows.

Improving system resiliency by developing strategies to adapt to environmental challenges such as drought and climate change will be important going forward. This will require identification critical infrastructure systems that are vulnerable to coastal hazards such as sea level rise to ensure that they are adequately protected or relocated if necessary.

For Moloka`i to have a more sustainable future, it will be necessary to incorporate green infrastructure to restore natural systems where possible. Low Impact Development (LID) features design techniques that attempt to maintain the natural, pre-development hydrology of a site and the surrounding watershed, resulting in a more sustainable land development pattern. LID integrates road design with stormwater and wastewater management systems in order to minimize environmental impacts. Stormwater is not considered a waste product to be disposed of, but rather it is viewed as a resource.

8.1 WATER

A. EXISTING CONDITIONS

There are three public water systems on Moloka`i and three private water systems (see Figure 8.1). Most of Moloka`i's water sources are concentrated in the northeast part of the island, whereas, most of the demand is located in the more developed areas to the Central and West Moloka`i and the southeast coast. Water sources include both streams (surface water) and aquifers (groundwater). Due to increasing withdrawals, several wells have been experiencing rising salinity, and as a result, the State Commission on Water Resource Management (CWRM) designated the island as a Ground Water Management Area in 1992. With this designation, the State was authorized to protect the groundwater resources by managing withdrawals from the aquifer through use of a permitting process.

Moloka'i Irrigation System (MIS) water usage has remained constant over the years; however, the system has experienced water shortages due to persistent drought conditions. Efforts to develop new water resources have been considered, such as utilizing brackish water wells and recycled sewage effluent. The County 2015 Capital Improvement Program budget includes design of a new well that is intended as backup source for the Kualapuu well serving the Kaunakakai area.

Figure 8.1 Molokai Water System Usage

Water System	Ownership	Potable (P) or Non-potable (NP)	Water Usage[1] (gallons/day)	% Potable Consumption	% Non-potable Consumption	% of Total Water Consumption[2]
Moloka'i Irrigation System (MIS)	Public	NP	3,250,000	---	95%	61%
Department of Water Services (DWS)	Public	P	807,816[3]	44%	---	16%
Department of Hawaiian Home Lands (DHHL)	Public	P	326,053	17%	---	6%
Waiola O Moloka'i	Private	P and NP	429,350	13%	5%	11%
Moloka'i Public Utilities (MPU)	Private	P	403,455	21%	---	8%
Kawela Plantation	Private	P	90,000	5%	---	2%

Source: Moloka'i Recent Water Use Estimates prepared by the County DWS Planning Division.

[1] Water usage for Waiola and MPU are from 2007; DWS is from 2013;
[2] Percentage total exceeds 100 due to rounding.
[3] Includes 23.726 for Kala'e from DHHL system.

B. ISSUES

Issue 1: Much of Moloka`i's water delivery system infrastructure is outdated and in need of replacement.

Issue 2: Potential Contaminating Activities (PCAs) have been identified that may pose a threat to Moloka`i's water quality[4].

Issue 3: Disputes over water use and allocation need to be resolved.

Issue 4: Droughts have created water supply shortages in recent years.

C. GOAL, POLICIES, AND ACTIONS

GOAL **Moloka`i will have a sufficient supply of potable and non-potable water provided in an environmentally sustainable and cost-effective manner.**

Policies

1. Recognize water rights of Hawaiian's and DHHL homesteaders under the Hawaiian Homes Commission Act, the State Water Code and other laws.
2. Supply water in sufficient quantities to meet the community's needs.
3. Support the provision of adequately priced irrigation water to agricultural lands.
4. Ensure safe, efficient and reliable water systems through improvement, replacement, and enhancement of the existing water supply and development of new water sources.
5. Encourage CWRM to update Moloka`i's sustainable yield figures and establish maximum withdrawal values.
6. Encourage water resource conservation planning.
7. Encourage use of alternative water sources such as dual line water supply and recycled water distribution systems.
8. Support public and quasi-public partnerships to protect and restore the island's watershed and maximize aquifer recharge.
9. Support management of water withdrawal to ensure sustainable yields.
10. Incorporate local knowledge and advise on water resource issues.

[4] Molokai Draft Wellhead Protection Ordinance, 2013

Actions

No.	Action	Lead County Agency	Partners
8.1.01	Complete an Agriculture Master Plan that ties desired agriculture production areas and uses to reliable, cost-effective water sources.	OED	DOA UH-CTAHR Farmers
8.1.02	Develop a Water Use and Development Plan (WUDP) for Moloka`i with a comprehensive monitoring, repair, and replacement strategy.	DWS	DHHL, DOA Private Water Co's
8.1.03	Implement recommendations from the 2013 *Update of the Hawaii Water Reuse Survey and Report*.	DEM	DLNR CWRM
8.1.04	Promote the DWS low-flow fixture giveaway program.	DWS	
8.1.05	Develop, adopt and implement a wellhead protection strategy and ordinance for County water distribution systems.	DWS	DOH

8.2 WASTEWATER

The Maui County Code defines wastewater as "water-carried wastes from dwellings, commercial establishments, institutions and industrial plants, and may include groundwater, surface water and storm water not intentionally admitted." Management of wastewater is important because it helps guard the water supply from becoming contaminated, protects the public health and environment, and aids in water conservation by allowing reclaimed water to be used for non-potable water purposes. Wastewater on Moloka`i is now managed using public and private wastewater systems, individual septic systems, and cesspools. The main issues with the island's wastewater systems are vulnerability of the current facility to hazards and the use of the individual septic tanks and cesspools.

A. EXISTING CONDITIONS

The County of Maui Department of Environmental Management, Wastewater Division, provides wastewater service in the town of Kaunakakai and the Kualapu'u subdivision. Wastewater collected by the Kaunakakai system is treated at the County's Kaunakakai Wastewater Reclamation Facility (WWRF). Wastewater collected by the Kualapu'u system goes to the private facility that is owned and operated by Moloka`i Properties Limited (MPL), which also treats Maunaloa Town and Kaluakoi as well as the Paniolo Hale and Ke Nani Kai condominium developments. The remainder of the island is served by individual septic tanks and cesspools, including all schools, all major visitor accommodations, the Ho'olehua Airport, and all development on Department of Hawaiian Home Lands (DHHL) homesteads.

Cesspools are considered substandard systems because they don't treat wastewater, they merely dispose of it. Cesspools concentrate wastewater in one location, often in direct contact with groundwater, causing groundwater contamination. This groundwater flows into drinking water wells, streams and the ocean, harming public health and the environment. In 2014, the Department of Health (DOH) proposed revisions to its Wastewater Systems Rules that will update the regulation of cesspools in Hawaii. Proposed changes include prohibiting the installation of new cesspools and requiring connections or upgrades of existing cesspools that most affect human health and water quality within one year after the sale of property. Only cesspools that are near a public drinking water well, and those within 750 feet of the shoreline, a stream or a wetland will be affected. There is a total of 1,442 cesspools on Moloka`i; 505 (35%) are affected by the proposed regulations.

The Kaunakakai WWRF is located on a 23-acre shoreline property makai of Maunaloa Highway. The facility treats wastewater to R-2 standards (disinfected secondary treated recycled water with restrictions on uses and applications). The Wastewater Division has indicated that the 0.3 mgd capacity of the WWRF is currently adequate. This conclusion is supported by the State Department of Health's decision to waive the requirement for development of a facilities plan, which is normally mandated when a facility reaches 75% of capacity.

A 2004 corrosion study identified a number of force mains that require replacement in order to avoid costly line failures and possible major sewage spills. The Kaunakakai Wastewater Pump Station force main was replaced in 2007. The Kaunakakai effluent force main is scheduled for replacement in fiscal year 2019 at an approximate cost of $2 million[5]. Reclaimed water from the WWRF is utilized to a limited extent. Approximately 10,000 gallons per day (5% of total flow) are used to irrigate landscaping in the facility and roadway grassed areas. The remaining flow of roughly 240,000 gallons per day is disposed of by injection well.

B. ISSUES

Issue 1: Kaunakakai Wastewater Reclamation Facility is located in the coastal floodplain leaving it exposed to damage from tsunamis or other dangerous high water events.

Issue 2: There are a number of Individual Wastewater Systems (IWS's) such as cess-pools and septic systems in use on the island in close proximity to ground water drinking sources.

Issue 3: Potable water resources are used for purposes such as flushing toilets and home garden irrigation.

C. GOAL, POLICIES, AND ACTIONS

GOAL **Moloka`i will have reliable, efficient and environmentally sensitive wastewater services that meet future needs and maximize wastewater reuse where feasible.**

Policies

1. Meet or exceed State and Federal standards for wastewater disposal or reuse where feasible.
2. Promote development of neighborhood-scale wastewater disposal systems.
3. Promote the beneficial use of recycled wastewater.
4. Promote economical, environmentally sensitive and innovative methods for disposal of excess treated wastewater effluent.
5. Promote location of new critical infrastructure or relocation of existing systems outside of inundation zones vulnerable to coastal hazards.

[5] County of Maui, 2016 Capital Improvement Program

1 .**Actions**

No.	Action	Lead County Agency	Partners
8.2.01	Assess the feasibility of either providing measures to protect the Kaunakakai WWTF against inundation threats or of relocating it out of the coastal floodplain.	DEM	DWS, DHHL, DOA, DOH, EPA
8.2.02	Develop a Comprehensive Wastewater Functional Plan.	DEM	DPW, DWS DSA
8.2.03	Conduct a wastewater reuse study that includes identification of potential reclaimed water users, required infrastructure improvements, estimated costs, and funding sources.	DEM	DWS, DHHL, DOA, DOH
8.2.04	Explore options and necessary code and regulation changes to allow graywater reuse systems for irrigation and toilet flushing.	DPW DSA	DEM DOH
8.2.05	Replace the Kaunakakai effluent force main prior to the end of its useful life.	DEM	

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3

8.3 Stormwater Drainage

Moloka`i is formed by three volcanoes: West Moloka`i, East Moloka`i, and the Kalaupapa Peninsula. West Moloka`i rises to 1,400 feet in elevation and East Moloka`i to about 5,000 feet. In the Kaunakakai watershed, the average elevation is about five feet near the coast rising to 4,200 feet in the mountains. Median annual rainfall ranges from about 10 inches on the coast to about 75 inches at the upper elevations.[6]

A. EXISTING CONDITIONS

Drainage problems on Moloka`i from runoff during periodic rain and storm events have caused damage to homes and businesses for years. The resulting flooding creates hazardous conditions and inconveniences for residents and visitors. A combination of natural and manmade factors contribute to the problem including poorly drained soils in low-lying areas, flat terrain, as well as inadequate, nonexistent or poorly maintained drainage systems in Kaunakakai town.

Existing drainage systems were designed to convey, divert, or retain runoff generated within the vicinity. However, many of these systems are badly in need of maintenance, and many of the downstream systems (ditches and roadway culverts) are incapable of accommodating the runoff generated from developed conditions upstream. During heavy flows, water will overtop the Kaunakakai Stream crossing over Kamehameha Highway resulting in severely hampered access to emergency services.[7]

The Kaunakakai Stream levee has adequately prevented flooding from occurring within the Kaunakakai area. However, analysis completed in March of 2014 by the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) showed that the Kaunakakai levee system does not provide a high level of protection against a 100-year flood event. FEMA has proposed revising the Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) reports. These changes could affect a number of properties in Kaunakakai. Property owners within the newly mapped high-risk areas with certain mortgages would be required to obtain flood insurance.

[6] *County of Maui Infrastructure Assessment Update, 2003*
[7] *Maui Infrastructure Assessment Update*, 2003

B. ISSUES

Issue 1: Storm water flows down dirt roads into gulches and the ocean.

Issue 2: Localized minor flooding causes repeated areas of water ponding or mud.

C. GOAL, POLICIES, ACTIONS

GOAL **Surface water runoff is managed to prevent flooding and to improve water quality for both fresh and coastal waters.**

Policies

1. Support improvement of the island's drainage system
2. Provide surface water management for roadways and developed areas.
3. Manage surface water using natural system drainage, retention and filtration to reduce flooding and siltation of ocean waters.
4. Encourage DHHL compliance with County regulations on drainage.

Actions

No.	Action	Lead County Agency	Partners
8.3.01	Develop a comprehensive stormwater management plan for settlement areas that emphasizes use of natural systems drainage where possible.	DPW Planning Dept.	DHHL
8.3.02	Build dispersion and retention facilities to address dirt road runoff.	DPW	DHHL
8.3.03	Implement Kaunakakai Master Drainage Plan.	DPW	
8.3.04	Inspect, and if necessary, repair stormwater drainage swales and culverts and remove blockages from drains and channels.	DPW	DHHL
8.3.05	Prepare a GIS database which inventories existing stormwater infrastructure.	DPW	DHHL
8.3.06	Evaluate older swales and drains for current functioning and restore, if needed. Add natural drainage storage and filtration to supplement existing system.	DPW	DHHL

8.4 Solid Waste

A. EXISTING CONDITIONS

Moloka`i's Integrated Solid Waste Facility (MISWF) is located at the 25 acre Naiwa Landfill and Recycling Center. The facility accepts solid waste for the entire island and receives approximately 17 tons of waste each day. Permitted landfill capacity was projected to be exhausted by 2015; approximately $3 million was expended in 2014 to build Landfill Cell No. 4, providing additional waste disposal capacity until 2029.

In 2009, the Department of Environmental Management's Solid Waste Division updated its county-wide Integrated Solid Waste Management Plan (ISWMP). The ISWMP provides a comprehensive blueprint for the planning and expansion of the County's solid waste management system. The ISWMP has a goal of achieving a 60% recycling of the waste stream. Although there is no curbside recycling on Moloka`i, the Recycling Center has a drop-off program that accepts both residential and commercial waste. The Moloka`i Metals Facility accepts scrap metals, appliances, vehicles and other metal waste periodically on scheduled collection events. The County's 2015 Capital Improvement Program (CIP) budget includes funding for design and construction of a new recycling facility, however, the project has been postponed and will be re-evaluated in the 2017 budget.

B. ISSUES

Issue 1: Too much solid waste is being sent to landfill.

Issue 2: There are no facilities for scrapping vehicles, machinery, metal, household hazardous waste, white goods and bulky goods.

C. GOAL, POLICIES, AND ACTIONS

GOAL **Moloka`i will minimize the volume of solid waste that enters the island's landfill through a comprehensive and environmentally sound approach to solid waste management.**

Policies

1. Make County government operations a model for zero waste.
2. Educate the public about waste reduction programs and measures.
3. Support increased recycling by commercial and residential customers, including bulky, hazardous, and metal waste materials.
4. Support the development of efficient and cost effective ways to deal with obsolete and abandoned vehicles, machinery and appliances.
5. Encourage waste-to-energy solutions.
6. Ensure that all solid waste and recycling facilities are landscaped and well maintained.
7. Ensure that leachate from landfill sites, either expanded or new, does not degrade soil or pollute ground, surface or coastal waters.

Actions

No.	Action	Lead County Agency	Partners
8.4.01	Complete construction of a new recycling facility to avoid existing conflicts with operation of the landfill.	DEM	
8.4.02	Expand waste diversion and recycling programs that include appliances, metals, plastic, glass, cardboards, green-waste (for compost) and other recyclable materials.	DEM	Private Waste Collectors
8.4.03	Develop public outreach, education, and incentive programs that improve waste reduction, reuse, and recycling.	DEM	DOH
8.4.04	Implement the ISWMP through programs, improvements, and upgrades to the solid waste management system; execute the CIP budget in a timely manner.	DEM	DOH, Private Waste Collectors
8.4.05	Expand the recycling center's operating hours.	DEM	
8.4.06	Increase the number of public trash cans throughout the island.	DEM	

8.5 Transportation

An integrated, affordable multi-modal transportation system is critical to the quality of life for Moloka`i residents, and to support a diversified economy. Moloka`i relies heavily on its transportation systems – air and sea – to deliver people, goods and services to the island. Most consumable goods are transported to the island via barge, making the cost of most items more expensive than on Maui or on O`ahu. Reliance on an effective, efficient and affordable inter-island passenger transportation system is also evidenced by survey results that show 60% of residents travel off island for health care services[8].

A. EXISTING CONDITIONS

Air

Moloka`i has two airports - Moloka`i Airport and Kalaupapa Airport - although only Moloka`i Airport is located in Maui County. Moloka`i Airport originally opened in 1929 and has two general aviation runways located on 288 acres on the island's central plateau. It is owned and operated by the State of Hawaii, Department of Transportation Airports Division. The facility is designated as a small commercial airport with a transport runway classification. Moloka`i is served by carriers Mokulele, and Ohana by Hawaiian. In 2013, Moloka`i Airport had a total of 34,518 aircraft arrivals and departures.[9]

The *Molokai Airport Master Plan* was prepared in 1999 by the Hawaii Department of Transportation (HDOT) Airports Division. To accommodate the projected demands through the year 2020, recommended upgrades include extending and improving the airfield runway and taxiway, building a new terminal building, and improving parking and terminal roadways.

Sea

Moloka`i has a mix of harbor facilities. Kaunakakai Harbor on the south side of the island is the primary harbor for the island. It includes 2 berths, 29 moorings, 1 ramp, and 1 pier. Hale o Iono, located 7 miles southwest of Cape Halawa, is a ruined wharf with 1.5 acres of protected anchorage for day and overnight recreation. Kamalo Wharf on the south shore is considered a temporary-use facility rather than a permanent mooring area.

The Moloka`i Ferry is a privately owned operation that transports passengers twice daily back and forth between Lahaina on Maui and Kaunakakai. There is no longer a direct freight ferry service connection between Moloka`i and Maui, which creates logistical problems for producers of perishable goods. Also, the current Young Brother freight ferry schedule makes it difficult to ship perishable goods from Honolulu, since goods departing there on the Sunday night ferry are only accepted on Friday until 11:00 am.

[8] *Hawaii Statewide Transportation Plan – Report on Public Opinion Poll*, November 2010

[9] Source: Hawaii State Department of Transportation, Airports Division

Products originating or arriving outside of Hawaii first arrive in Oahu then move on to Moloka`i. The additional leg of travel increases Moloka`i shipping costs and shipping times, which can affect spoilage rates for agricultural products.

Land

Most roads on Moloka`i are publicly owned and managed; the County is responsible for local roads and the State for Kamehameha V Highway (Hwy 450), Maunaloa Highway (Hwy 460) and Kalae Highway (Hwy 470). Traffic volumes on Moloka`i are generally low and growth projections do not anticipate much of a change in the future. The *Moloka`i Long-Range Land Transportation Plan* was prepared by HDOT in 1997. The goal of the plan is to provide a safe and efficient land transportation system through the year 2020.

The 1997 HDOT plan recommended upgrades to address several issues such as improving drainages, constructing bridges, and widening roadways at a number of locations around the island. There is significant shoreline erosion along Kamehameha V Highway on the southeast side of the island. Reinforcing, protecting, or relocating these segments may be necessary in order to maintain safety and reliable operations.

Moloka`i is largely rural and has few pedestrian facilities. The *Statewide Pedestrian Master Plan* (HDOT, 2013) considers persons living below the poverty level, the elderly, and students to be Pedestrian-Oriented Populations. Moloka`i has a higher than average concentration of persons living below the poverty level. The Pedestrian Plan recommended improvements to Farrington Avenue near Molokai High School due to concerns over student safety.

The island does not currently have a bikeway system; however, bicycle improvements have been planned along nearly 60 miles of roadway on Moloka`i.[10] While there is no public transit system on the island, the non-profit social services agency Maui Economic Opportunity (MEO) operates a rural shuttle service for youth, elderly, disabled and the general public. The MEO shuttle serves three service areas: Moloka`i East, Moloka`i West, and Moloka`i Central. Private commercial taxi and shuttle services are also available.

In 2009, the Hawaii legislature amended state statutes to require the Hawaii Department of Transportation (HDOT) and Hawaii's four county transportation (or public works) departments to adopt 'Complete Streets' policies that accommodate all users of roadways, including pedestrians, bicyclists, transit users, motorists and persons of all ages and abilities. Complete Streets is a relatively new approach to street and transportation design which aims to accommodate all users of roadways and rights of way. Maui County has a Complete Streets policy and consideration of this policy should be made for the design of Moloka`i's roadways.

[10] *Bike Plan Hawaii*, Hawaii Department of Transportation 2003

Projected Multi-Modal Transportation System

Multi-Modal Transportation System Future Vision (To be further developed)

Moloka`i will have a safe, efficient and effective multi-modal land transportation system:

- Designed to maintain harmony between the natural and constructed environments to ensure that the natural beauty and character of Moloka`i is preserved;
- Composed of complete streets, roads and highways that accommodate multiple users including freight, trucks, cars, transit vehicles, bicycles, and pedestrians;
- Designed to enhance the character and quality of life in Moloka`i's small towns as walkable, pedestrian oriented, compact communities; and
- Providing cost-effective connections to air and sea transportation facilities at the interisland transportation hubs at Kaunakakai Harbor and Moloka`i Airport.

Future Roadway Improvements & New Roads (To be further developed)

Future Transit (To be further developed)

Future Bicycle Facilities and Trails (To be further developed)

Future Pedestrian Facilities (To be further developed)

B. ISSUES

Issue 1: High shipping costs and limited options place Moloka`i businesses at a competitive disadvantage.

Issue 2: The current ferry schedule makes it difficult to ship perishable goods between islands or to the mainland.

Issue 3: There is significant shoreline erosion along Kamehameha V Highway on the southeast side of the island.

Issue 4: There is concern about pedestrian and bicycle safety because many of Moloka`i's streets do not have sidewalks or bike lanes.

C. GOAL, OBJECTIVES, POLICIES, ACTIONS

TRANSPORTATION

GOAL **Moloka`i will have an integrated multi-modal transportation system that supports a diversified economy and meets the needs of residents and visitors while respecting the island's rural character.**

Policies

1. Support the expansion of air services to Moloka`i as needed.
2. Support implementation of the 1999 Airport Master Plan that anticipates extending and improving the airfield runway and taxiway and a new terminal building with onsite parking and terminal roadways.
3. Ensure rapid and cost effective transport of Moloka'i's agricultural products to Maui and Oahu markets.
4. Explore options for direct barge service from Moloka`i to Maui.
5. Support improvements to Kaunakakai Harbor.
6. Support the improvement and, if warranted, expansion of ferry service from Moloka`i to Maui.
7. Maintain the rural character of Moloka`i's road system while accommodating multiple modes of transportation – including transit, freight vehicles, automobiles, pedestrians, and bicycles.
8. Support improving access to East Moloka`i during wet weather events by providing bridges at sites of flooding on Kamehameha V Highway.
9. Encourage innovative and alternative traffic management strategies such as the installation of modern roundabouts to avoid the use of traffic lights.
10. Support safe pedestrian routes and bike paths along highways and arterials in accordance with the County's *Complete Streets Policy*.
11. Support improving bus service between communities on Moloka`i.

Actions

No.	Action	Lead County Agency	Partners
8.5.01	Work with State DOT to ensure that the airport and air services meet the needs of Moloka`i's residents, visitors and businesses.	OED	Planning Dept. HDOT
8.5.02	Explore the need for and impacts of regular air service between topside Moloka`i and Kalaupapa.	OED	Planning Dept. HDOT
8.5.03	Encourage the State to implement HDOT's 1999 *Molokai Airport Master Plan.*	OED	HDOT
8.5.04	Identify challenges and propose solutions to transporting Moloka`i agricultural products to Maui and Oahu markets.	OED	Planning Dept. HDOT
8.5.05	Advocate for increased barge and ferry service to and from Moloka`i.	OED	HDOT
8.5.06	Identify harbor and airport improvements designed to further support the agricultural industry.	OED	Planning Dept. HDOT
8.5.07	Develop Hale O Lono Harbor for recreational purposes and ensure public access, while maintaining its ability to provide back-up commercial capacity to Kaunakakai.	DPW	HDOT
8.5.08	Plan for an integrated multi-modal transportation system with complete streets that serve automotive, public transit, bicycle, pedestrian, and other land transportation modes.	DPW	HDOT
8.5.09	Develop Moloka`i specific roadway standards and guidelines.	DPW	Planning Dept.
8.5.10	Encourage the State to implement HDOT's 2003 *Bike Plan Hawaii*.	DPW	HDOT
8.5.11	Encourage the State to implement HDOT's 1997 *Moloka`i Long-Range Land Transportation Plan.*	DPW	HDOT
8.5.12	Develop and implement a trail, greenway and open space access plan that utilizes old agriculture roads where appropriate.	Planning Dept.	Parks & Recreation
8.5.13	Improve traffic circulation in Kaunakakai by developing a new access road between mauka residential areas and Kamehameha V Highway.	DPW	HDOT
8.5.14	Integrate a parking study with parking mitigation measures into a Kaunakakai Revitalization and Beautification Plan.	Planning Dept.	DPW
8.5.15	Evaluate existing MEO transportation services and determine if there are underserved routes or user groups.	DPW	MEO
8.5.16	Explore the feasibility of providing County bus service on Moloka`i.	DOT	HDOT

8.6 Energy

The cost to produce power in Hawai`i is higher than on the U.S. mainland for a number of reasons: there are no economies of scale in Hawai`i's market due to the relatively small population base and the use of imported crude oil to fuel the power generators makes Hawai`i vulnerable to global crude oil price fluctuations.

A. EXISTING CONDITIONS

In 2013, MECO had 12 megawatts of diesel-generating capacity that provided electricity to 2,649 residential customers and 562 commercial customers on Moloka`i. In 2012, MECO lost about $200,000 subsidizing the island's electricity rates. There is potential for the island to generate much of its own electricity if its energy infrastructure is improved. Currently the electrical grid currently can't handle more than 15% input from small scale individual wind/solar power systems. In order to accommodate more new small scale wind and solar power sources, existing electrical distribution controls will need to be upgraded with smart grid technology to better manage these intermittent sources of electricity.

In 2013, the average residential electricity rate on Moloka`i was 46 cents per kilowatt hour (kWh); the rate was 37 cents per kWh on Maui; and it was 12 cents per kWh nationally.The State of Hawai`i and the US Department of Energy launched the Hawai`i Clean Energy Initiative in 2008. The goal is to meet 70% of the state's energy needs by 2030 through energy efficiency and renewable energy; additional renewable energy sources would provide 40% and increased energy efficiency 30%. In 2013, 18% of Hawai`i's electricity was generated from renewable resources; primarily from bioenergy, wind, geothermal, and rapidly expanding solar.

Moloka`i has more than enough renewable energy resource potential to meet electrical demand.[6] It's estimated that four 1.5-megawatt wind turbines could meet half the island's electrical use and Moloka`i also has sites that are suitable for utility-scale solar and biomass projects. In 2013, Princeton Energy Group announced plans to build a 20-megawatt solar photovoltaic project on an 80-acre parcel owned by Moloka`i Ranch. The project would be built out in phases and could eventually meet 80% to 90% of Moloka`i's electrical energy needs.

[6] Hawaii Energy Fast Facts, November 2014; Hawaii State Energy Office · energy.hawaii.gov

B. ISSUES

Issue 1: Dependency on fossil fuels for electricity generation results in a lack of control over costs and supply chain security. Accordingly, Moloka`i has some of the highest electricity rates in the state and in the country.

Issues 2: Inability of the island's existing power grid to effectively handle intermittent energy sources such as solar and wind power.

C. GOAL, POLICIES, AND ACTIONS

GOAL **Moloka`i will meet its energy needs through development of local clean renewable energy sources and implementation of energy efficiency and conservation measures.**

Policies

1. Support accelerating development of alternative energy sources to help reduce dependency on oil and other fossil fuels.

2. Support increased use of alternative fuels on Moloka`i such as ethanol, natural gas, biodiesel, hydrogen, propane, food waste materials, and by-products from feed and fiber production.

3. Support programs that provide incentives to use more efficient vehicles, appliances, lighting, and other energy consuming devices.

4. Encourage County services and facilities to be energy efficient and to utilize renewable energy where possible

5. Ensure that main utility transmission lines are robust and resilient enough to withstand hurricane forces winds.

6. Promote the under-grounding of utilities in new areas of development and in existing areas where feasible

1
2 **Actions**

No.	Action	Lead County Agency	Partners
8.6.01	Develop a Diversified Energy Strategy for Moloka`i that examines locations for large and small scale renewable energy systems.	Energy Office	State Energy Office, ECO
8.6.02	Create a smart grid that would allow for integration of additional renewable energy sources.	Energy Office	MECO
8.6.03	Provide loan programs and tax incentives to encourage individuals and businesses to install renewable energy systems and to use energy saving devices.	Energy Office	State Energy Office, MECO
8.6.04	Adopt an updated building code requiring increased use of energy conservation devices in both new construction and renovations.	DPW	Energy Office
8.6.05	Provide education on energy efficiency and conservation in elementary and secondary schools.	Energy Office	School District
8.6.06	Develop an ordinance that would require all new County buildings and facilities to achieve LEED certification.	DPW	State Energy Office

3

8.7 Telecommunications

A. EXISTING CONDITIONS

The *Maui County General Plan 2030 Telecommunications Assessment* (January 2007) found that wireless telephone and internet service deficiencies exist on Moloka`i due to the dispersed nature of development. The study found that urbanized areas had moderate service coverage while the non-urbanized areas had limited coverage. Another assessment conducted in 2012 by the State of Hawaii Department of Commerce and Consumer Affairs indicated that Moloka`i residents were dissatisfied with cable and internet service and pricing.[11] At that time, system performance was limited since it was provided by microwave feed from Lahaina rather than by undersea fiber optic cable, even though much of the on-island distribution was by fiber cable. However, in 2013 Oceanic successfully negotiated a lease of existing undersea fiber optic cable and since then, download speeds reportedly have improved[12].

B. ISSUES

Issue 1: Limited access to high speed internet and telecommunications services presents challenges for education, health care, and businesses.

Issue 2: There are dead spots on the island for cellular/mobile telephone service.

C. GOAL, POLICIES, AND ACTIONS

GOAL **Moloka`i will have a robust, resilient, and reliable telecommunications network.**

Policies:

1. Encourage and support the expansion of the mobile cellular network.
2. Encourage and support the expansion of high speed internet services.
3. Ensure that all schools are provided high speed internet services.
4. Encourage increased telecommuting activities for residents.

[11] *Community Ascertainment and Related Activities, Results as of 5/30/13*, State of Hawaii Department of Commerce and Consumer Affairs

[12] "Oceanic Internet Upgrade", The Moloka`i Dispatch, July 22nd 2013, http://themolokaidispatch.com/oceanic-internet-upgrade/

Actions

No.	Action	Lead County Agency	Partners
8.7.01	Work with telecommunications providers to increase the number of cell towers in order to provide more reliable service.	OED	Oceanic, Verizon
8.7.02	Work with internet providers to expand high speed internet service throughout the island.	OED	Oceanic, Verizon

9 | PUBLIC FACILITIES AND SERVICES

9.1 PARKS AND RECREATION

The County of Maui department of parks and recreation is responsible for the development, operation, and maintenance of county park facilities. The State Department of Land and Natural Resources (DLNR) has jurisdiction over State Beach Parks, Natural Area Reserves and other managed lands. The National Park Service manages Kalaupapa.

Moloka`i's developed parks and open spaces that include tot lots, sports courts, a gymnasium, pool and athletic fields. The facilities range in scale from just under an acre to over two hundred acres.

One of the most significant issue facing the county's park system on Moloka`i is the lack of an overall plan for parks and recreation facilities. Although the island's park system is modest in scope, it will be difficult to meet the needs of current and future residents without a master plan that documents the island's needs and provides a direction for planning, maintenance, and development. Another notable issue that the Community Plan should address is public access to shoreline areas, an issue that was raised at the community plan workshops in 2010.

A. EXISTING CONDITIONS

Moloka`i currently has 14 County parks and facilities, including the Cooke Memorial Pool, three Community Centers, six community parks, and five neighborhood parks. Despite an abundance of park space, most parks do not provide park amenities that are typically found in developed parks. This may because many existing parks are designed to serve beach park requirements rather than community needs for recreation. Maui County also manages the use of Community Centers which are available to the public for meetings, social gatherings, or other events. The Community Centers are public and ADA accessible.

Park and recreation facilities on the East End's south shore include two public access rights-of way to the beach, three day parks, an athletic field with a community center, and two access trails to pubic hunting areas. There are a number of privately owned beach accesses are in general public use that do not qualify as publicly managed facilities.

Despite miles of shoreline on the East End, public access with adequate facilities is limited. Even though there is relatively low population in the East End, the many island residents, as well as a growing numbers of tourists use this area for coastal recreation. The only public boat ramp is over ten miles away at the Kaunakakai Wharf.

Figure 9.1 Moloka`i Public Parks

NAME OF PARK	LOCATION	OWNERSHIP	PARK TYPE	SIZE (acres)
Pala`au	Central	State	State Park	233.70
Cooke Memorial Pool	Kaunakakai	County	Community Park	.50
Duke Maliu Regional Park	Central	County	Community Park	10.00
Halawa Park	East end	County	Neighborhood Park	1.00
Kakahaia Park	Central	County	Neighborhood Park	0.80
Kaunakakai Ball Park	Kaunakakai	County	Community Park	6.47
Kaunakakai Lighthouse/MalamaPark	Kaunakakai	County	Special Area	3.35
Kilohana Community Center	Kaunakakai	County	Community Park/Community Center	7.60
Kualapuu Park& Community Center	Central	County	Community Park/Community Center	6.77
Maunaloa Subdivision Park	West end	County	Neighborhood Park	2.00
Maunaloa Community Center	West end	County	Neighborhood Park/Community Center	3.00
Mitchel Pauole Community Center	Kaunakakai	County	Community Center	8.78
One Ali`iPark		County	County Park	11.00
Papohaku Beach Park	West end	County	Beach Park	10.40
Pu`u Hauole Park	Kaunakakai	County	Neighborhood Park	1.30
TOTAL ACRES				**306.67**

Source: "Public Facilities Assessment Update County of Maui." March 9, 2007. R.M. Towill Corporation, Honolulu, Hawaii

One of the most critical issues is that the Department of Parks and Recreation does not have a comprehensive park and recreational facilities plan. Without such a plan, it is difficult to prioritize projects or to initiate improvements in a systematic way. Also, the department typically initiates development projects on the basis of its six-year capital program budget, updated on an annual basis, rather than a long-term plan. A parks and recreation master plan would identify community needs, identify priorities, provide a vision for the future, and define a capital improvement program that is based on a rational assessment of community needs.

The State Department of Land and Natural Resources (DLNR) manages approximately one million acres of land, which can be divided into roughly three categories: (1) land where the public is actively invited to recreate (e.g. State parks); (2) land where the public is not actively invited, but where it is known that the public utilizes the land (e.g. forestry area reserves and unencumbered State land); and (3) land where the public does not enter (e.g. inaccessible watershed areas). Through the Na AlaHele trail and access system, the State makes many of its conservation lands available to residents and visitors. These trails invite the pubic to enjoy some of the most intimate and pristine place of the County. There is one trail on Moloka`i, four are on Lanai and 16 trails are on Maui.

B. ISSUES

Issue 1: It is difficult to plan for future improvements because there is no current assessment of community needs for Moloka`i's parks, facilities, and recreation programs

Issue 2: There are an insufficient number of recreational youth programs, especially for children.

Issue 3: Moloka`i's parks and recreational facilities are in disrepair and in need of regular maintenance and improvements to meet the community's needs.

Issue 4: Moloka`i has a wealth of open spaces, trails, parks, and cultural sites but access to some sites is difficult or blocked.

Issue 5: Malama Park has the potential to be a key cultural and community place but is now in disrepair.

C. GOAL, OBJECTIVES, POLICIES, ACTIONS

GOAL **Moloka`i will have a full range of public facilities, recreational opportunities, and programs that meet the current and future needs of the island's residents and visitors.**

Policies

1. Establish and cultivate a systematic approach to planning and improving the island's parks, facilities, and recreation programs.

2. Expand access to recreational opportunities and community facilities to meet the present and future needs of residents of all ages and physical abilities.

3. Improve the quality and adequacy of community facilities ensuring that they are clean and well maintained, and that there is an adequate supply of public restrooms in convenient locations.

4. Require the dedication and development of usable park sites as part of the development of new single-family residential areas in the mauka portion of Kaunakakai Town and Kamiloa.

5. Ensure access to the island's parks, trail systems, open spaces, and cultural sites where appropriate.

Actions

Table 9.1 Public Facilities and Services - Parks and Recreation

No.	Action	Lead County Agency	Partners
9.1.01	Develop, adopt and regularly update a parks and recreation master plan that incorporates public facilities, parks, other recreational opportunities and a financial component.	Parks + Recreation	
9.1.02	Identify and acquire appropriate park sites in accordance with a parks and recreation functional plan.	Parks + Recreation	
9.1.03	Identify government public rights-of-way to determine if they can be incorporated into an island-wide parks and recreation functional plan.	Parks + Recreation	Planning
9.1.04	Amend County zoning and subdivision ordinances to require the inclusion of park facilities into large master-planned communities.	Planning	
9.1.05	Amend development regulations to ensure the construction of adequate parking with pathways near public shoreline access points.	Planning	

9.1.06	Adopt a beach/mountain access dedication ordinance pursuant to Chapter 46, HRS to improve access along the shoreline and mountains.	Planning	

9.2 POLICE

The Maui County Department of Police has only one main police station located in Kaunakaka`i. Currently, the greatest challenge for the Police Department is recruiting new officers.

A. EXISTING CONDITIONS

The entire island of Moloka`i comprises Maui Police Department District V. This police district is served by the Moloka`i Station, with 29 budgeted uniformed patrol officers and an estimated share of nine investigative officers. The district is divided into two motorized beats and each beat is patrolled by a single officer. The current number of officers slightly exceeds the estimate of need in the *Public Facilities Assessment* published in 2007.

In 2004, the Moloka`i Station received 4,750 calls for service, or 169.9 percent per officer, representing approximately 7.7 percent of total calls for service in the County. Based on population alone, Moloka`i CPR's current need is estimated at approximately nine officers. However, given the remoteness of this island and large area requiring police coverage, it is necessary to field more officers to ensure adequate police service.

Moloka`i District has a projected need for 13 additional patrol officers by the year 2035, as cited in the 2007 *Public Facilities Assessment.* Police service on Moloka`i is determined to be adequate through the study horizon of 2035. Animal control is aided by the Moloka`i Humane Society and the Maui County Animal Welfare Coalition, a non-profit community services organization that provides shelter, spay/neuter services, adoptions, sustenance, and humane education.

B. ISSUES

Issue 1: There is a lack of police response capabilities and facilities in the outer reaches of Moloka`i - east and west ends

Issue 2: More police presence in the form of bicycle or foot patrol is needed in Kaunakaka`i. [Per 2001 Moloka`i Community Plan]

Issue 3: Substance abuse is a continuing problem on the island.

C. GOAL, POLICIES, ACTIONS

GOAL **An effective and efficient police force to help make a safe, peaceful and friendly community.**

Policies:

1. Explore the possibility of expanded police presence in the east and west ends of Moloka`i.

2. Encourage the development, adoption and implementation of programs that address substance abuse.

3. Maximize the island's police resources to properly enforce substance abuse laws.

3. Support the placement of bicycle and/or foot patrol officers in Kaunakaka`i as needed.

4. Encourage involvement on the Police Commission by a Moloka`i representative.

Actions

Table 9.2 Public Facilities and Services - Police

No.	Action	Lead County Agency	Partners
9.2.01	Coordinate with community organizations in their prevention and treatment efforts to reduce substance use and abuse	Maui Police Department	
9.2.02	Continue working cooperatively with the Prosecutor's Office and the DEA to enforce substance abuse laws.	Maui Police Department	

9.3 FIRE AND PUBLIC SAFETY

An adequate fire protection service, within close proximity to all populated areas, is necessary to protect life and property. The mission of the Maui County Department of Fire Control (DFC) is "to protect life, the environment and property from fires, hazardous materials releases, and other life threatening emergencies." Its officers and equipment are used to fight and control fires, perform emergency rescue services, and provide community education on fire safety. The Department of Fire and Public Safety is Maui County's first responder to public safety incidents and is often involved with land and water rescue.

A. EXISTING CONDITIONS

Three fire stations serve the Island. Kaunakaka`i Station, newly constructed, replaced the existing facility in 2010 and is located on Ala Malama Street in Kaunakakai and is responsible for the Kaunakakai area. The Ho`olehua Station covers Ho'olehua and Maunaloa. The Puko'o Station is located on Kamehameha V Highway, at the east end of the island.

Figure 9.3 Fire Protection Facilities

Name	Type*	Location	2005 Population Served
Kaunakakai Fire Station #4	T, E	130 Ainoa Street Kaunakakai	3,564*
Ho'olehua Fire Station #9	E	2190 Farrington Highway	1,782*
Puko'o Fire Station #12	E	Kamehameha V Hwy	1,782 *

Source: *Public Facilities Assessment Update County of Maui 2007*
Notes: Moloka`i population split 50% to Kaunakakai, 25% to Hooolehua, 25% to Puko'o
Type: E=Engine; L=Ladder; T=Tanker, R=Rescue

The Department of Fire & Public Safety is presently completing a "Standards of Cover" report that is expected to be finished summer 2015. This report will assess the adequacy of the current level of fire service coverage. This is the first time that such a report has been compiled. This research will attempt to address the expectations of the citizens, fire department and County Government in terms of level of fire service needed. Other factors critical to providing the adequate level of fire service is the level of funding available.

With regard to fire service for the East End, MFD has a memorandum of understanding (MOU) with the State of Hawaii to lease the current parcel where the Pukoo fire station is located. The facility is over 80 years old, in disrepair and sits in a tsunami and hurricane inundation zone.

B. ISSUES

Issue 1: A large number of residential areas of Moloka`i are not covered by existing fire stations.

Issue 2: There is a fire risk above Manila Ranch Camp

Issue 3: There would be a lack of fire coverage on the West End if future growth occurs.

C. GOAL, POLICIES, ACTIONS

GOAL **Protect life, property and the environment by providing effective and efficient fire protection and rescue services for the island of Moloka'i.**

Policies:

1. Evaluate the results of the 2015 "Standards of Cover" report due to be completed summer 2015. Address fire service needs as indicated in the report.

2. Evaluate options to relocate the Pukoo Fire Station out of the tsunami and hurricane inundation zone and in a manner that meets fire services as needed on the east end.

3. Work with the Maui Fire Department to encourage programs and projects that will address fire risk above Manila Ranch Camp.

4. Explore options for locating fire, safety, emergency and ocean rescue services on the West End as population warrants.

1 Actions

Table 9.3 Public Facilities and Services - Fire and Public Safety			
No.	**Action**	**Lead County Agency**	**Partners**
9.3.01	Develop a fire risk and vulnerability assessment for the area located above Kaunakakai.	Maui County Department of Fire Control (DFC)	Moloka`i Ranch
9.3.02	Explore options for relocating Pukoo fire station to a location that is not vulnerable to flooding, tsunamis and best meets the needs of east end residents.	DFC	Moloka`i Ranch

9.4 EDUCATION

The Hawaii school system is a statewide system that manages all public schools in the state. The County of Maui does not have any jurisdiction over the public school system; however, coordination between the State and County is necessary for planning future school locations and acquiring adequate land.

A. EXISTING CONDITIONS

There are four public elementary schools, grades K through 6, on Moloka`i are as follows: 1) Kaunakakai, 2) Kualapu`u, 3) Maunaloa, and 4) Kilohana (located in Ulapuaa). In Kualapu`u, Moloka`i High/Middle School is the public school for students in grades 7-12. Aka`ula is a private school with students in grades 5-8 located in Kualapu`u. All of the public schools, except Moloka'i Middle, have adequate capacity to accommodate projected 2015 and 2035 enrollment. Moloka'i Middle School's 2035 enrollment is projected to exceed capacity; however, the overage could be accommodated by an increase in classrooms and facilities.

Moloka`i High School has five career pathway programs of study: Arts and Communication, Business, Industrial and Engineering Technology, Health Services and Agriculture. The agriculture program and the Future Farmers of America, allow students to enjoy hands-on experiences in commercial, terrace, permaculture, hydroponic and aquaponic farming. Moloka`i High also offers Hawaiian language immersion, English as a second language, advanced placement, gifted and talented, honors, alternative learning center and special education programs[1]. Enrollment in 2014 was 326 students, with 27 full-time teachers.

The Aka'ula School offers an alternative to public school that provides a, multi-age, transitional environment for Moloka`i students in grades five to twelve. They focus on a learning, leading, and decision making as fundamental collaborative processes[2].

The University of Hawaii Maui College – Moloka`i Education Center (UHMC-Moloka`i) is located in Kaunakakai. UHMC-Moloka`i offers a Bachelor or Associate degree in Applied Sciences, an Associate in Arts, and Associate in Science degrees. There is a library and facilities for distance learning through Hawaii Interactive Television System, also known as Skybridge. The Skybridge allows two-way interactive learning with students located on Moloka`i, Kahului, Hana, Lāna`i, and Lahaina. There is also access to education through cable TV and the internet.

[1] Hawaii State Department of Education, http://www.hawaiipublicschools.org

[2] The Aka'ula School, http://akaulaschool.org/

B. ISSUES

Issue 1: Many people on Moloka`i do not have relevant technical knowledge or skills to enter the 21st century workforce, acquire skilled jobs, or start their own business.

C. GOAL, POLICIES, AND ACTIONS

GOAL **High-quality educational facilities and programs that accommodate the community's diverse learning needs.**

Policies

1. Support the expansion of facilities and programs at University of Hawaii Maui College, Moloka'i campus.

2. Support an expanded array of adult education, post-secondary, vocational, English as a second language, business, technical, professional, and career counseling programs that prepare Moloka`i residents for future occupations and business opportunities.

3. Support adequate and affordable preschool facilities and programs.

4. Encourage major employers to support or provide English as a second language education for employees.

Actions

Table 9.4 Public Facilities and Services – Education			
No.	**Action**	**Lead - County /Other**	**Partners**
9.4.01	Work in partnership with all educational institutions to meet current and future needs including appropriate location, timing and design of future facilities.	DHHC	DOE UH Maui College
9.4.02	Continue to assess and fund adult and post-secondary education programs.	DHHC	DOE UH Maui College
9.4.03	Continue to assess and fund English as a second language classes.	DHHC	DOE
9.4.04	Assess need for additional pre-school services.	DHHC	DOE
9.4.05	Develop workforce development program internships.	OED	Employers

9.5 HEALTH AND SOCIAL SERVICES

Moloka`i's health and social service needs are increased due to conditions on the island that include: 1) geographic isolation and high cost for off-island travel; 2) low state rankings in measurements of economic health, socio-economic stability and food security; 3) high unemployment rate; 4) a reported 38% of residents living outside the usual social service network and relying on subsistence farming, hunting, and fishing; and 5) language barriers[3]. Moloka`i has been designated a Medically Underserved Area and a Health Professional Shortage Area for Primary Care, Dental Care and Mental Health, by the U.S. Public Health Service. This designation brings some financial support, which is combined with a sufficient market through population size, to help provide a broader array of services.

[3] Moloka`i Ohana Health Care Inc. http://www.Moloka`ichc.org/

A. EXISTING CONDITIONS

Moloka`i's community is served by one hospital, two health centers, a Native Hawaiian health clinic, and a full service pharmacy. The hospital and clinics work in partnership to provide inpatient and outpatient medical and dental care, health education and screenings, mental and behavioral health services, remote rural service, translation, and social services.

Moloka`i General Hospital (MGH) is a general medical and surgical hospital in Kaunakakai with 15 beds, an emergency room, and urgent care clinic. The hospital provides imaging services, both diagnostic and therapeutic, through a CT scanner and ultrasound. In addition, the MGH provides community outreach through health fairs, health screenings and Meals on Wheels. An overall demand analysis conducted in 2004 indicated no need for additional hospital beds through 2030 over currently-licensed levels. Moloka`i General Hospital no longer accepts long term care patients, but does have a referral program.

Many of the hospital's preventive services to the Hawaiian community are offered in partnership with Na Pu`uwai, Inc. a community-based Native Hawaiian organization. Na Pu`uwai, Inc. was founded in 1985 and incorporated as a non-profit in 1986 and is dedicated to betterment of the health conditions of Native Hawaiians[4].

In 2002 Moloka`i Ohana Health Care (MOHC), doing business as Moloka`i Community Health Center (MCHC) applied for and received funding through the U.S. Bureau of Primary Health Care under Section 330 of the Public Health Service Act to develop a freestanding, centrally-located community health center providing core primary health care services[5]. The Moloka`i Community Health Center provides services that focus on the health care needs of a target population that is 200% below the federal poverty guidelines. Moloka`i ranks as the fourth worst community, out of twenty-seven communities statewide, for combined socio-economic and maternal and child health risk[6].

The Moloka`i Family Health Center provides family and general practice, and internal medicine services. There are also private medical offices offering service in medicine, dental care, optometry, and chiropractic care. The hospital, clinics, pharmacy, and offices are all located within Kaunakakai, with some services to remote rural areas.

[4] Na Pu`uwai, Inc., http://www.napuuwai.com/
[5] Ibid, Moloka`i Ohana Health Care Inc.
[6] Ibid.

B. ISSUES

Issue 1: An increasing older and elderly population will increase health and social service needs.

Issue 2: The Island has immigrant communities with limited English language skills that need health and social services in multiple languages.

Issue 3: Behavioral health, alcohol and substance abuse, domestic violence, child abuse and negligence, and sexual abuse, is a concern.

C. GOALS, POLICIES, ACTIONS

Goal **Moloka`i will have a comprehensive, integrated health care system that provides for the community's health and well-being.**

Policies

1. Encourage the provision of enhanced medical, dental, behavioral, and mental health care, and social services for the community through qualified professionals located on Moloka`i.

2. Encourage partnerships in healthcare provision to expand healthcare professional access, and diversity in service, resources and locations.

3. Support studies to determine community needs and underserved locations and ensure equitable distribution of services.

4. Support public health education and assessment programs throughout the island.

5. Encourage expansion of full-time mental and behavioral health case management positions, psychologists and psychiatrists on island.

6. Support a disabled persons infrastructure system, including health and social programs for all ages, services for the frail elderly, assistance for home-modifications to 'age in place', and long-term care facilities.

7. Support enhanced monitoring of care homes and transient facilities which provide services to mentally and physically disabled residents.

8. Encourage multi-modal transportation and recreation planning that increases opportunities for exercise through bike paths and pedestrian improvements.

Actions

Table 9.5 Public Facilities and Services – Health and Social Services

No.	Action	Lead - County /Other	Partners
9.5.01	Conduct community needs surveys and allocate funding to expand the number and variety of social services.	DHHC	
9.5.02	Coordinate with transportation and recreation planners to increase bikeways and pedestrian opportunities for exercise.	DHHC	Public Works Department of Recreation
9.5.03	Coordinate services for immigrants.	DHHC	DOH, Local Cultural Services
9.5.05	Encourage support and funding for the network of services for alcohol and substance abuse.	DHHC	
9.5.06	Encourage support and funding for the network of services for domestic violence, sex assault, and families in crisis.	DHHC	DHS DOH

9.6 GOVERNANCE

The County of Maui is the sole local government for the residents of the three inhabited islands of Maui Nui: Maui, Moloka`i, and Lana`i; there are no townships, or villages with separate municipal governments. The county seat and civic center is in Wailuku, Maui. Moloka`i is served by a single representative on the Maui County Council. Maui County has an elected mayor with a four-year term (two-term limit) and a nine-member council with two-year terms (two-term limit).

A. EXISTING CONDITIONS

The County seat is located in Wailuku on the island of Maui making direct participation in Council meetings difficult for Moloka`i residents. County Council meetings are scheduled during normal working hours and transportation to and from these meetings for Moloka`i residents is limited by ferry schedules and expensive flights. Recent improvements in telecommunications have enabled Moloka`i residents to participate remotely by phone conference.

The challenges of limited representation and personal participation in local government leads many residents to perceive that Moloka`i does not have the means necessary to ensure that decisions are made for the benefit of Moloka`i's people. Many County Boards and Commissions do not have Moloka`i representatives. Access to the full County Council is also limited as they do not regularly visit and residents cannot drive to the county seat in Wailuku to meet with decisions makers like the residents of Maui.

B. ISSUES

Issue 1: Moloka`i residents are concerned that there is a lack of effective representation at all levels of government.

Issue 2: There are insufficient opportunities for the Moloka'i residents to directly participate in county government councils, commissions, committees and boards.

C. GOAL, POLICIES, ACTIONS

GOAL **Government services will be transparent, accessible, cost-effective and responsive to meet the needs of Moloka`i's residents.**

Policies

1. Expand opportunities for Moloka`i residents to be involved in and affect County government decision making.

2. Encourage public participation and equal access to government among all Moloka`i citizens in order to promote civic engagement.

3. Provide a variety of information sources and technological connections for citizens to participate, communicate, and stay informed about their community and government. Develop improved government communication tools to help overcome existing language barriers.

4. Encourage elected officials at all levels of government to conduct regularly scheduled public information meetings on Moloka`i to discuss issues of importance.

Actions

Table 9.6 Public Facilities and Service - Governance

No.	Action	Lead - County Agency	Partners
9.6.01	Continue to improve, promote, and publicize the availability of telecommunications for county services and for participation in county council meetings held on Maui.	Mayor's Office	
9.6.02	Provide the Moloka`i Planning Commission with annual status reports as described in County Code Chapter 2.80B.	Planning Department	
9.6.03	Conduct regularly-scheduled public information meetings on-island.	Mayor's Office	Moloka`i Council Representative

10 | IMPLEMENTATION AND MONITORING

The preceding chapters identify programs, projects, and actions that need implementation to actualize the Moloka`i Community Plan's vision, goals, and policies. Maui County Code Chapter 2.80B specifies an implementation program for the plan's actions and milestones and requires status reports to monitor the progress of implementation. The implementation program includes a capital improvement element, an implementation schedule, and a financial element.

A. IMPLEMENTATION

The capital improvement (CIP) element includes the infrastructure systems and public facilities and services that will be needed over the twenty-year planning period, in two-year increments, to implement the Community Plan's vision, goals, and policies. CIP projects are included in the implementation schedule to facilitate capital improvement programming and serve as a guide for forthcoming large infrastructure budget items. The list does not include repair and maintenance projects.

The implementation schedule is included in this chapter and includes a description of the project or program, priority, timing, lead implementation agency (County), estimated cost, and potential funding source(s). Actions are identified as either Priority 1 or Priority 2, with Priority 1 being the highest priority. Identifying high priority actions helps agencies focus on implementing key actions considering time and budget constraints. Priority 2 actions are still considered important for implementing the Community Plan. The following questions were used to identify Priority 1 actions:

1. Will the action address an urgent issue?
2. Is the action required for public health and safety?
3. Is the action required by legal mandate?
4. Is the action required to prevent the loss of an irretrievable resource?
5. Will the action benefit the majority of the community?
6. Will the action significantly improve the quality of life of Moloka`i residents?
7. Is the action required for other actions to be initiated?
8. Is the action already funded?

Actions may be implemented by the lead County agency or by another entity, such as the State or non-profit groups, and assisted by the County agency. For actions that are not the primary responsibility of the County, and there is not a cost to the County budget, the estimated cost column in the implementation table is "not applicable" (N/A). The implementation program should provide enough flexibility over the life of the Plan to allow for reprioritization and adjustments to level of funding. Implementation of the actions listed in the schedule is subject to available funding.

Infrastructure Planning and Finance Policy Framework

The infrastructure funding strategy provides an efficient and equitable means of planning and financing infrastructure improvements. The County CIP funding strategy is comprised of three policy statements with underlying strategies to effectuate the policies.

1. Infrastructure Services Policy:

The County is responsible for determining areas where infrastructure and public facilities will be supported.

2. Infrastructure Expansion Policy:

Developers are generally responsible for public facility and infrastructure expansion costs associated with their projects. As a condition of subdivision or development approval, the County often requires new developments to construct on-site water, roads, wastewater, park facilities, and other infrastructure and public facilities pursuant to County standards. Upon completion of construction, the County may require the developer to dedicate the infrastructure/facilities to the County. Developments may also be required to donate easements or other types of partial rights to the County. In addition, developments are often required to provide financial assurance, such as bonding, to ensure enforcement of needed corrective action(s) or uninterrupted operation (in case of bankruptcy, abandonment, or any other default on financial obligation).

The County has also considered the imposition of impact fees, which are designed to mitigate the impact of new development on infrastructure and public facility systems. These one-time payments are made by the development; fees are typically passed on to either the seller of land or homebuyer to pay for the cost of infrastructure caused by new development. While the enabling ordinance for traffic impact fees have been enacted, the required studies that determine the actual fee amounts have yet to be adopted; other impact fee ordinances have been discussed but not enacted.

To ensure that no ambiguities exist regarding infrastructure funding responsibilities, the County may establish an infrastructure funding strategy to ensure that infrastructure improvements are implemented prior to or concurrent with development by the responsible party depending on the nature of the infrastructure project.

3. Existing Deficiencies Policy:

Through its CIP program, the County is responsible for funding operations and capital improvements to address existing deficiencies of County-owned and operated systems.

The Existing Deficiencies Policy shall be implemented by, but not limited to, the following strategy:

A. Identify existing service deficiencies and project future operations and maintenance needs: Using the CIP program, needs assessment studies, or adopted level-of-service standards, the County will identify existing service deficiencies and projected operations and

maintenance needs. The County may provide revenues sufficient to maintain the minimum acceptable level-of-service standards over the 20-year planning horizon. The County will encourage the State to upgrade its facilities to meet the County's LOS standards.

B. Develop and Utilize Alternative Funding Sources: The County could consider alternative funding sources to be used to finance major CIP projects. Some of these sources are currently available while others would require enabling legislation or voter approval before they could be utilized. Such alternatives include: public-private partnerships, which can save time and costs; strategic budget allocations or trust funds to create special funds for specific purposes; special district financing, such as tax districts or redevelopment districts, where revenues are reinvested in the same geographic area; and peak demand pricing, where the charge for the use of public facilities or infrastructure is increased during periods of heaviest use.

B. MONITORING

The Monitoring and Evaluation Program establishes a strategy to track plan implementation, evaluate the effectiveness of policies and programs, monitor the quality of life on Moloka`i, and allow for periodic program adjustments. This strategy includes establishing and monitoring performance indicators to help implementing agencies attain planned outcomes. Specific benchmarks will be used to measure progress in the implementation of community plan policies and actions. The Department of Planning will coordinate with the appropriate agencies and program specialists to establish benchmarks for major programs and initiatives. Physical, environmental, cultural, and socio-economic indicators will also be used to assess the overall quality of life on Moloka`i.

The Department of Planning will oversee the Monitoring and Evaluation Program, which will include the preparation of a Monitoring Report. The Department may modify or add indicators, as needed, to track the impacts of plan implementation. The Department will prepare a monitoring report to validate the progress of plan implementation and provide a portrait of the quality of life on Moloka`i.

Table 10.1 includes a core set of 39 indicators that could be used to monitor progress toward achieving the goals and objectives of the community plan. Many indicators identified in this plan have been borrowed from existing plans, programs and reports, and are based on available and reliable data to ensure their usefulness throughout the planning horizon. However, they can be modified and updated as new data becomes available.

Furthermore, the quality of life indicators are intended to represent a range of measurements across the various chapters of the community plan. The indicators are regional in nature to focus on the island as a whole. Where possible, commonly used indicators have been chosen in order to facilitate comparisons between Moloka`i and other jurisdictions. These core indicators not only provide a snapshot of the quality of life on Moloka`i, but also track the progress of key issues that the community plan intends to address. Table 10.2 articulates how the indicators relate to the community plan goals and details appropriate sources of data.

Table 10. 1 Core Indicators

BUILT ENVIRONMENT INDICATORS	*LAND USE*	
	1	Building permits by type
	2	Building permits issued in tsunami inundation zone and future sea level rise (%)
	3	Average density of new developments
	4	New urban developments consistent with Urban and Rural Design Principles (%)
	5	Housing affordability index
	TRANSPORTATION	
	6	Vehicle miles traveled
	7	Commute mode shares
	8	Annual transit ridership
	9	Dedicated bike lanes (total miles)
	INFRASTRUCTURE	
	10	Recycled waste (%)
	11	Parks and Open Space per 1000 population (acres)
	12	Energy consumption by source (%)
	13	Energy consumption per capita
SOCIAL ENVIRONMENT INDICATORS	*ECONOMIC DEVELOPMENT*	
	14	Cost of Living Index
	15	Employment by sector
	16	Value of agricultural production
	17	Permitted B&Bs and STRHs (#)
	18	Frequency of passenger flights
	19	Food produced and consumed locally
	POPULATION / COMMUNITY	
	20	Unemployment rate
	21	Poverty rate
	22	College bound rate
	23	Drug and alcohol arrests
	24	Child abuse and neglect
	25	Sex assault, domestic violence and mental health
	26	Licensed health care practitioners
	27	Adult residential care homes (# beds)
	CULTURAL HERITAGE	
	28	Hawaiian Language students (#)
	29	Subsistence food sources
	30	Properties listed on the State or National Registers (#)
	31	Scenic roadways (total miles)
NATURAL ENVIRONMENT INDICATORS	*WATERSHED SYSTEMS*	
	32	Reclaimed water use %
	33	Watershed health
	34	Drinking water quality
	OCEAN / MARINE ENVIRONMENT	
	35	Coastal water quality
	36	Healthy coral reefs (%)
	37	Reef fish biomass
	WILDLIFE AND NATURAL AREAS	
	38	Threatened and endangered species (#)
	39	Protected and conservation lands (total acres)

Table 10. 2 Core Indicators, Goals and Data Sources

	Built Environment Indicators	***Goal***	***Data Sources***
	LAND USE		
1	Building permits by type	Provide housing choices / create mixed-use communities	Planning Department
2	Building permits issued in tsunami inundation zone and future sea level rise (%)	Reduce risk from coastal hazards	Planning Department
3	Average density of new developments	Create walkable communities / increase housing affordability	Planning Department
4	New urban developments consistent with Urban and Rural Design Principles (%)	Create compact, efficient, human scale communities / enhance historic character	Planning Department
5	Housing affordability index	Increase housing affordability	NAR methodology / UHERO / Maui County Data Book
	TRANSPORTATION		
6	Vehicle Miles Traveled	Reduce fossil fuel consumption	Maui County Data Book / HI DOT
7	Commute mode shares	Provide a multi-modal transportation system / reduce fossil fuel consumption	HI DOT
8	Annual transit ridership	Provide a multi-modal transportation system / reduce fossil fuel consumption	County DOT
9	Dedicated bike lanes (total miles)	Provide a multi-modal transportation system / reduce fossil fuel consumption	HI DOT
	INFRASTRUCTURE		
10	Recycled waste (%)	Minimize solid waste / divert solid waste to recycling	Department of Environmental Management
11	Parks and Open Space per 1000 population (acres)	Expand opportunities for recreation	Department of Parks and Recreation
12	Energy consumption by source (%)	Reduce fossil fuel consumption / increase use of renewable energy	DBEDT
13	Energy consumption per capita	Reduce fossil fuel consumption	DBEDT

Table 10.2 Core Indicators, Goals and Data Sources (continued)

	Social Environment Indicators	***Goal***	***Data Sources***
	ECONOMIC DEVELOPMENT		
14	Cost of Living Index	Quality of life indicator	County of Maui Data Book
15	Employment by sector	Economic diversification	County of Maui Data Book
16	Value of Agricultural Production	Support agricultural economy	UHERO
17	Permitted B&Bs and STRHs (#)	Diversify the tourism industry	Planning Department
18	Frequency of passenger flights	Reliable air transportation	County of Maui Data Book
19	Food produced and consumed locally	Increase locally grown food	DOA, UH CTAHR
	POPULATION / COMMUNITY		
20	Unemployment rate	Economic resilience	UHERO / U.S. Dept. of Labor, Bureau of Labor Statistics
21	Poverty rate	Economic resilience	US Census Community Survey via DBEDT
22	Collage bound rate	Increase post-secondary education	Kids Count Data Centre, Annie E. Casey Foundation
23	Drug and alcohol arrests	Effective support services for individuals and families	Crime in Hawaii, Uniform Crime Reports
24	Child abuse and neglect	Effective support services for individuals and families	HI DHS, Child Welfare and Adult Protective Services
25	Sex assault, domestic violence and mental health	Effective support services for individuals and families	HI DHS, Child Welfare and Adult Protective Services
26	Licensed health care practitioners	Comprehensive health care system	County of Maui Data Book
27	Adult residential care homes (# beds)	Strength the eldercare infrastructure system	County of Maui Data Book
	CULTURAL HERITAGE		
28	Hawaiian language students (#)	Protect the diverse island culture and local traditions	HI DOE
29	Subsistence food sources	Protect the diverse island culture and local traditions	County of Maui Data Book
30	Properties listed on the State or National Registers (#)	Protect cultural resources	HI DLNR, Preservation Division
31	Scenic roadways (total miles)	Protect scenic vistas	Planning Department

Table 10.2: Core Indicators, Goals and Data Sources (continued)

	Natural Environment Indicators	***Goal***	***Data Sources***
	WATERSHED SYSTEMS		
32	Reclaimed water use	Decrease pollution , sustainability indicator	DOH, Safe Drinking Water Branch
33	Watershed health	Protect + enhance native eco-systems	DLNR, DOH, University of Hawai`i, Pacific Neon
34	Drinking water quality	Increase water quality, basic quality of life	DOH, Safe Drinking Water Branch
	OCEAN / MARINE ENVIRONMENT		
35	Coastal water quality	Decrease pollution	HI, DOH, Clean Water Branch
36	Healthy coral reefs (%)	Improve reef health	Division of Aquatic Resources, Dept. of Land and Natural Resources, HI
37	Reef fish biomass	Increase reef health, preserve biodiversity	Division of Aquatic Resources, Dept. of Land and Natural Resources, HI
	WILDLIFE AND NATURAL AREAS		
38	Threatened and endangered species (#)	Preserve biodiversity	US Fish + Wildlife Service
39	Protected and conservation lands (total acres)	Protect sensitive lands	County of Maui

Appendix 1.1 MOLOKA`I HISTORY SUMMARY

There were two initial land divisions on the island of Moloka`i, the *Ko`olau* and the *Kona* Districts. The *Ko`olau* District was made up of the *ahupua`a* of Halawa, Wailau, Pelekunu, Waikolu, Kalawao, Makanalua and Kalaupapa; the remaining *ahupua`a* were called the *Kona* District. In 1859, the Hawaiian Government combined the districts as it determined that one district would be more efficiently administered than two. This was done because the population of the island had dropped to 2,864 from an estimated 6,000 in 1832, and increasing numbers of people were beginning to migrate from the windward valleys on the north side of the island to the more accessible leeward coastal regions.

Then in 1909, a political division of the island was made to incorporate Moloka`i as one of the districts in the newly formed Maui County, where it remains today. The Kalaupapa Settlement was administratively separated and became known as Kalawao County, managed by the State Department of Health.

The planning region under consideration here encompasses only the district of Moloka`i which is made up of fifty-three ahupua`a, and excludes those of Kalawao County. Most of the place names used today are derived from the traditional ahupua`a names.

Throughout its history, the island has been characterized by its rural, agricultural base, first established by the early *kanaka maoli*. Moloka`i's strong sense of traditional, culturally significant history is represented by its many ancient Hawaiian sites, as well as by the impressive ruins of Kalua`aha Church, built in 1844 representing the establishment of the first Missionary station in 1832 and Father Damien's St. Joseph's church at Wawaia.

One of the earliest settlement dates for Hawai`i, 500-600 A.D., established by carbon-14 testing, was found on the Halawa Valley shoreline along the windward coast of the island of Moloka`i. These deep valleys with their perennial streams, separated one from another by sheer *pali* plunging vertically into the sea, were developed into terraces for intensive taro cultivation. Today, the stone evidence of these extensive irrigation systems, terracing, *heiau, ko`a* (fishing shrines) and habitation sites are found in the now largely deserted valleys.

The more forgiving lush, green southeastern portion of this land is thought to have been the home of the majority of early Hawaiians. *Lo`i Kalo* (ponded terraces) were found in every wet valley and ringed the shoreline sides of the numerous stone-walled fishponds stretching almost uninterrupted from Honolewai to Waikāne and beyond. *Mauka* of the ponds, *`uala* (sweet potato) and *wauke* (paper mulberry) plants were cultivated between long shallow terraces which swept across the lower *kula* slopes. There are 136 recorded *heiau* on the island and of these 36 are found from Kamalo`o mana`e to Honoulimalo`o, including `Ili`ili`opae *heiau* at Mapulehu, the largest on the island and thought to be the oldest.

At the time of western contact in 1778, the estimated population figure for Moloka`i was 10,500. When the first permanent Mission Station was established 1832 at Kalua`aha by Harvey Rexford Hitchcock, he gave a census figure of 6,000 for the island, very close to today's population figure. By 1910, this 6,000 population figure had fallen to 1,006, not including the patients at the Kalaupapa Settlement.

Although not officially in the planning area being considered; Kalawao had a significant and important part in the history of Moloka`i. During the early 1800's the Kalawao peninsula on the windward coast held a small thriving community of Hawaiians. Partially due to its strategic location between the deepest valleys and the summer fishing grounds to the west, it served as a center of the Ko`olau District's activities. Its isolated location was chosen in 1865 by Kamehameha V to serve as the area set aside for those unfortunate victims of leprosy, or Hansen's Disease. The Hawaiian residents were relocated and given land either at Kainalu on the east end of Moloka`i or on one of the other Hawaiian islands.

The *pali* trails became the life-lines for food and supplies to the settlement, greatly increasing the need for reliable trails and a cart road from the *pali* to the harbor at Kaunakakai. Access was strictly controlled and the area was virtually cut off from the rest of the population of the island. There were around 700 patients when Father Damien arrived in 1873 to spend the rest of his life caring for the sick of the peninsula.

Moloka`i residents were often employed by the Department of Health, which administered the Settlement, to keep the trails and road passable. It was during this period that Moloka`i became known as the Lonely Isle, and in 1909, the area was officially separated from Moloka`i as Kalawao County.

In 1859, Kamehameha IV had established a sheep ranch on the west end at Kaluako`i, which his brother Kamehameha V expanded by acquiring additional lands augmented by other types of livestock. This was the founding of Moloka`i Ranch, later purchased in 1897 by a group of Honolulu businessmen when it became known as the American Sugar Company. The sugar enterprise did not last long as their wells, with the sustained pumping required, produced saline water which soon killed the cane in the fields. The ranch again reverted to a livestock venture.

Various diversified agricultural enterprises had been established during the 1870's, among them three small-scale sugar plantations and mills at Kala`e, Moanui and Kamalo`o. These operations had all shut down by 1900. One of the few remaining significant historical sites on the island is the restored 1878 R. W. Meyer Sugar Mill at Kala`e.

Puko`o was the first town in the western sense and the first County seat with a court house, lock-up, wharf and several small stores. As Moloka`i developed into a limited market-oriented economy surrounding the plantation and ranching activities to the west, a gradual population shift began to occur, and in 1925 the County business center was moved to `Ualapu`e, where a new hospital had opened. Changes were taking place so rapidly, that only ten years later Kaunakakai

had assumed the role of major commercial and political center of the island, and the physical facilities were again transferred westward.

Usually islands were dependent on their surrounding waters for the transportation of goods and people; however, considering the long, narrow configuration of Moloka`i, it would seem probable that trails became a more practical and convenient means of travel from north to south, windward to kona. These trails were gradually turned to horse paths, later widened to accommodate animal drawn cars, wagons or buggies, and eventually when trucks and the automobile were introduced to Moloka`i, they became western-style roads. This new mode of transportation required not only better roads, but supplies of oil and gasoline for fuel.

As larger ships with deep drafts came to the islands, they required wider openings in the reefs and deeper, well-protected waters for anchorage. On Moloka`i, the harbors were shallow and vulnerable to shifts in the gusty winds. Ships not able to negotiate the reef were forced to anchor in deeper water or tie up to the government installed buoys. Canoes or whaleboats transported passengers and goods to shore, to be met by ox-carts driven over the shoals or to be later deposited on one of the small wharves. The cattle were forced into the water to swim to the waiting ships and lifted by sling onto the decks.

Contributing to the modernization of transportation on Moloka`i, several wharves were constructed during the early 1880's at Kaunakakai, Puko`o, Kamalo`o, Kalaupapa and Pelekunu. Of the five original wharves, only Kamalo`o wharf barely survives today and is gradually breaking up. The stones of old Kaunakakai wharf are under water approximately one hundred yards west of the present wharf, built in 1899.

In the early 1900's, inter-island steamers began carrying freight, produce and passengers to and from Moloka`i, an increasingly vital link for the economic well-being of the island. The Kaunakakai wharf has been improved and lengthened several times over the years; the harbor has been dredged and cleared of obstructions and the opening in the reef widened to accommodate the larger barges of Young Brothers and slips for fishing and pleasure boats.

Passenger travel by ship became less popular with the opening of Ho`olehua airport in 1928; and in 1929, the Inter-Island Airways inaugurated their first regular air service to Moloka`i's new airport, providing a fast, reliable link with other islands.

The island's population began to increase dramatically in the early 1920's, and by 1930 there were 4,427 people on the island; an increase of 3,421 in ten years. The first change occurred when the Government passed the Hawaiian Homes Act in 1921, resulting in the settlement of Kalama`ulna, Hoolehua, Pala`au and Kapa`kea. The establishment of two pineapple plantations, Libby, McNeill and Libby (later Dole Pineapple) at Maunaloa in 1923, and California Packing Corporation (Del Monte) in 1927 at Kualapu`u, further encouraged the gradual population shift west from the more populated eastern areas of the island. These plantations both closed down during the 1970's and 1980's, leaving the island again dependent on diversified agriculture, primarily vegetable farming and cattle ranching. In the late 1970s, resort development at the west

end of the island at Kaluakoi became an influence on the islands economy. The population increased during this period to 6,049. The current population remains relatively stable at 6,717

Lack of an adequate water supply had been a major deterrent to the development of diversified agriculture on Moloka`i before 1969 when the Moloka`i Water System was built by the State of Hawaii under joint funding with the Federal Government. The major elements of the system were three stream diversion works and three wells in Waikolu Valley, a 5.1 mile long water development and transmission tunnel and a transmission pipeline from the tunnel to the reservoir. This water was earmarked primarily for the Hawaiian Homelands and agriculture.

In 1992, Moloka`i was designated a Water Management Area for groundwater by the State's Commission on Water Resource Management (COWRM) to regulate existing and future uses of Moloka`i's limited groundwater resources. The designation resulted from extensive community involvement and from the fact that the current and projected future groundwater uses were determined to exceed 90 percent of the sustainable yield of Moloka`i's groundwater resource. As a result of Moloka`i's designation, all groundwater users, with the exception of domestic users tapping off an established water system (i.e. the County of Maui system), are required to obtain a water user permit from COWRM which shows the amount of water allocated and how it will be used. Hearings for these permits are held on Moloka`i. Prior to designation, no water use permits were required, and the state had no obligation to hold meetings about Moloka`i water matters on Moloka`i.

The character of the island of Moloka`i remains a truly *mokupuni kua`aina* (country island) both culturally and geographically, and it is this that distinguishes it from other islands and makes Moloka`i *Moloka`i.*

Appendix 1.2 Background Studies for Community Plans

The following list of technical studies was used in the development of the Lāna`i Community Plan. The public facilities and infrastructure assessments, and the socio-economic forecast were conducted for the County of Maui General Plan. The economic development and housing issue papers, and the land use forecast were conducted specifically for this community plan update.

- The *Final Public Facilities Assessment Update County of Maui*. (March 2007) identifies public facilities and services (e.g., schools, parks, police and fire protection, hospital, and solid waste disposal services) issues and opportunities in high-growth community plan regions.

- The *County of Maui Infrastructure Assessment Update (*May 2003) identifies infrastructure (e.g., roadways, drainage, water, wastewater, telephone and electrical systems) issues and opportunities in the community plan regions.

- The *Moloka`i Economic Development Issue Paper: A Discussion Paper for the Department of Planning Community Plan Update* (December 2010 and 2015 Update) discusses current economic conditions and strategies for the future.

- The *Moloka`i Housing Issue Paper, Draft: A Discussion Paper for the Moloka1i Community Plan Update,* (In-Progress Working Draft, (December 2010) discusses current issues and projected future needs.

- The *Land Use Forecast, Island of Moloka`i, Maui County General Plan Technical Resource Study* (December 2012) provides a measure of existing and future vacant and undeveloped lands using the Community Plan land use designations.

- The *Socio-Economic Forecast, The Economic Projections for the Maui County General Plan 2030* (June 2006) projects residential, visitor, and employment growth, as well as housing demand. This planning tool is used to predict future growth scenarios for each community plan region.

Appendix 1.3 Community Engagement

Before the CPAC process began, the county held several public workshops and conducted many interviews with Molokai residents during 2010-2011. The purpose of these activities was to hear directly from the people who lived on the island, to listen to their concerns, and to understand what their hopes are.

Open House Events: June – October 2010

June 2010

The kick-off open house for the Molokai Community Plan was held on Saturday, June 26 from 10:00 AM to 2:00 PM at the Kaunakakai Elementary School cafeteria. More than 40 residents attended the open house, which was organized to solicit and record as many comments as people were willing to off er. Participants could visit five "stations" in the room. Some displayed information about Molokai while others asked visitors to write comments in response to specific questions.

October 2010

Two additional workshops were held in October 2010 to gather comments from Molokai residents on a variety of questions and issues. The workshop was organized by the Long Range Division (LRD) staff from the Maui County Planning Department and its consultant team from Chris Hart and Partners (CHP). It was held from 9:00 AM to 1:00 PM at the Mitchell Pauole Center and about 60+ people participated in the workshop, based on the sign-in sheets and a visual count.

The workshop was designed with three sessions: 1) Vision and Core Values; 2) Issues and Opportunities; and 3) Goals and Strategies. Participants in small groups were asked to respond to specific questions on these three topics.

The methodology used for the third workshop differed from the second. Each group was given a specific topic area to discuss rather than each group covering all topic areas. This methodology was chosen due to the amount of material to be covered. The four topic areas consisted of 1) economic development, 2) heritage resources, 3) land use, development and housing, and 4) infrastructure and public services.

November 2014

An outdoor open house was held on Saturday, November 15 from 10:00 AM – 1:00 PM at Kaunakakai Elementary School. Because the last event was held several years previously, this open house was meant as a 'refresher" of what had been expressed in the three previous community workshops.

Interviews

During 2010 -11, about 40 interviews with Molokai residents were conducted by the county's planning staff. The interviews typically took about an hour and asked people what their thoughts were on the island's issues, opportunities, ideas for the future, and any other topics that were particularly relevant. Interviews were almost always held at a residence or office and included from one to three of the county's planners.

A summary of common themes from the interviews is shown below.

COMMON THEMES DESCRIBED BY INTERVIEW PARTICIPANTS - 2010

People

- Molokai's residents are resilient and resourceful, used to making do with what's available.
- In general, people like Molokai's low-key and laid-back lifestyle, and are willing to do without to maintain it the way it is and has been.
- There appear to be two groups – the more vocal activists and the "silent majority".

Issues

- Transportation between Molokai and other islands is limited which limits economic development opportunities (especially for farmers)
- The island's infrastructure (water systems, parks, roads, etc.) are inadequate to meet current demands.
- Molokai residents feel like a forgotten stepchild of Maui County.
- The island's economy has not improved over the last two decades – some feel that it's gone backwards.
- Living off welfare appears to be part of the island's culture.

Land Use

- The county's permit process is a constant source of frustration among residents and business owners. The process is too long and cumbersome.
- Zoning laws are not being enforced consistently or equitably.

The Future

- The island attracts a distinctive visitor, one who is looking for Hawaii as it used to be and is content with Molokai's untouched beauty and its cultural authenticity.
- New visitor facilities should be small-scale rather than large resorts (the exception is Kaluakoi)
- Opening the Kaluakoi Hotel would be a good thing for the economy.
- More jobs and more people are needed.
- Diversified agriculture needs to be part of the island's economic development.
- The distribution of water is key to the island's economy.
- Improving educational levels and the educational system are key to strengthening the island's economy. Maui Community College could have a greater presence.

Appendix 2.1 Definition of Sustainability In Hawai‘i

From *Hawai`i 2050 Sustainability Plan* (2008):

> *A Hawai‘i that achieves the following:*
> *Respects the culture, character, beauty and history of our state's island communities*
> *Strikes a balance between economic, social and community, and environmental priorities*
> *Meets the needs of the present without compromising the ability of future generations to meet their own needs.*

The updates to the County of Maui's General Plan – which includes the Countywide Policy Plan, The Maui Island Plan, The Lana`i Community (Island) Plan, the Molokai (Island) Community Plan, and the Community Plans on Maui Island – embrace this concept of sustainability, along with the guiding principles in ***Hawai`i 2050***.

In 2011 the Hawai`i State legislature enacted into law State Bill 283, which established sustainability as a state priority by incorporating the Hawai`i 2050 Priority guidelines and principles into Chapter 226, the Hawai`i State Planning Act, of the Hawai`i Revised Statutes.

Appendix 2.2 Guiding Principles of Sustainability – Hawai`i 2050 (HRS§ 226-108)

Priority guidelines and principles to promote sustainability shall include:
We balance economic, social, community and environmental priorities.
We respect and live within the natural resources and limits of our islands.
We must achieve a diversified and dynamic economy.
We honor the host culture.
We make decisions based on meeting the present needs without compromising the needs of future generations.
The principles of the ahupua‘a system guide our resource management decisions.
Everyone — individuals, families, communities, businesses and government — has a responsibility for achieving a sustainable Hawai‘i.

Appendix 2.3 HRS §226 - Climate Change Adaptation Priority Guidelines

HRS §226- Climate change adaptation priority guidelines:

(a) Priority guidelines to prepare the State to address the impacts of climate change, including impacts to the areas of agriculture, conservation lands, coastal and near shore marine areas, natural and cultural resources, education, energy, higher education, health, historic preservation, water resources, built environment (such as housing, recreation, transportation), and the economy:

(1) Ensure that Hawai`i's people are educated, informed, and aware of the impacts climate change may have on their communities;

(2) Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies;

(3) Invest in continued monitoring and research of Hawai`i's climate and the impacts of climate change on the State;

(4) Consider Native Hawaiian traditional knowledge and practices in planning for the impacts of climate change;

(5) Encourage the preservation and restoration of natural landscape features (such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands) that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;

(6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;

(7) Promote sector resilience (in areas such as water, roads, airports, and public health) by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;

(8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other non-governmental entities, including nonprofit entities;

(9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and

(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy.

Appendix 3.1 Ecosystem Services

Ecosystem Services is a term for the benefits that humans receive from natural resources and processes. These services are grouped into four categories as shown below. Many of these ecosystem services are essential to human life and are provided free of cost. Examples of ecosystem services are often used to illustrate the value of natural processes and resources, such as forest regulation of air quality. Calculation of financial values to replace ecosystem services ties economic benefit to environmental health. The categories below are adapted from the Millennium Ecosystem Assessment 2003: *Ecosystems and human well being; a framework for assessment*, Island Press, Washington DC.

Supporting Services

- Nutrient cycling
- Soil formation
- Primary production

Provisioning Services

- Food (crops, livestock, wild foods, etc…)
- Fiber (timber, cotton/hemp/silk, wood fuel)
- Genetic resources
- Biochemicals, natural medicine, pharmaceuticals
- Fresh water

Regulating Services

- Air quality regulation
- Climate regulation (global, regional, local)
- Water regulation
- Erosion regulation
- Water purification and waste treatment
- Disease regulation
- Pest regulation
- Pollination
- Natural hazard regulation

Cultural Services

- Aesthetic values
- Spiritual and religious values
- Recreation and ecotourism

Appendix 6.1 Comparison of State Land Use and County Community Plan Designations and Zoning Districts

STATE LAND USE DISTRICTS	COUNTY COMMUNITY PLAN DESIGNATIONS	COUNTY ZONING DISTRICTS[1]
Urban	**Single Family (SF)**	**Residential Districts**
		R-1, 6,000 sq ft
		R-2, 7,500 sq ft
		R-3, 10,000 sq ft
		R-O Lot Line Residential
	Multi-Family (MF)	**Multiple-Family districts**
		Two-family duplex district A-1 Apartment District A-2 Apartment District
	Mixed-Use Residential *Note: Proposed new land use designation- zoning to be developed concurrent with draft community plan.*	*Proposed mix of Residential and Multiple-Family Districts, including neighborhood parks, Business/Commercial, and Public/Quasi-Public*
	Hotel (H)	**Hotel Districts**
		H-1 Hotel District H-M Hotel District H-2 Hotel District
	Business/Commercial (B) **Business/Industrial (BI)** **Business/Multi-Family (BMF)** **Service Business/Single Family Residential (SBR)**	**Business Districts**
		B-1 Neighborhood Business District B-2 Community Business District B-3 Central Business District B-CT Business Country Town District SBR Service Business Residential District
	Light Industrial (LI) **Heavy Industrial (HI)**	**Industrial Districts**
		M-1 Light Industrial District M-2 Heavy Industrial District M-3 Industrial (no pyramid zoning)

[1] Examples of listed zoning districts are not exclusive, as additional zoning categories beyond those listed may be appropriate, or amendments may be made to the comprehensive zoning ordinance.

STATE LAND USE DISTRICTS	COUNTY COMMUNITY PLAN DESIGNATIONS	COUNTY ZONING DISTRICTS
Urban (continued)	**Airport (AP)**	**Airport District**
	Public/Quasi-Public (P)	**Public / Quasi-Public Districts**
		P-1 P-2
	Project District (PD)	**Project Districts (PD)**
	Park (PK)	**Park Districts**
		PK-1 PK-2 PK-3 PK-4
Rural	**Rural**	**Rural Districts**
		RU-0.5 RU-1.0 RU-2.0 RU-5.0 RU-10.0
Agriculture	**Agriculture**	**Agricultural District**
	Open Space (OS)	**Open Space Districts**
		OS-1 Passive Open Space OS-2 Active Open Space
Conservation		

Appendix 6.2 County Community Plan Designations

The County's nine geographic community plan regions are: Wailuku-Kahului, West Maui, South Maui, Pa`ia-Ha`iku, Makawao-Pukalani-Kula, Hana, Moloka`i, Lāna`i and Kaho`olawe. The following list includes the designations used in the most recently adopted community plan updates, though not every community plan uses all of these designations. The Lāna`i Planning Commission created one new designation, Mixed Use Residential and shows conservation lands as the State Land Use Conservation District. The State Conservation District is used to protect and preserve wilderness areas, beach reserves, scenic areas and historic sites, open ranges, wetlands and watersheds; to conserve fish and wildlife; and to promote forestry and grazing.

County community plan land use designations are not regulatory. The following list of designations provides general descriptions of types of uses.

Single-Family (SF): This includes single-family, duplex, and ohana dwellings.

Multi-Family (MF): This includes apartments and condominiums having more than two dwellings.

Mixed-Use Residential (MUR): A proposed new designation that would include a mix of single and multi-family residential, neighborhood parks, business/commercial, and public/quasi-public uses.

Hotel (H): This applies to transient accommodations. Such hotel facilities may include permissible accessory uses primarily intended to serve hotel guests.

Business/Multi-Family (BMF): This includes a mixture of retail, office, and commercial services which are oriented to neighborhood service and single family and multi-family residential uses.

Service Business/Single-Family Residential (SBR): Includes single-family dwellings with small-scale and neighborhood-oriented businesses and services that are primarily established in existing residential dwellings or other structures. The business use should be compatible with the physical character of the residential neighborhood.

Business/Commercial (B): This includes retail stores, offices, entertainment enterprises and related accessory uses.

Business/Industrial (BI): Includes a mixture of warehousing, distribution, service operations, retail and offices uses.

Light Industrial (LI): Denotes warehousing, light assembly, service and similar industrial operations.

Heavy Industrial (HI): Denotes major industrial operations with potentially noxious impacts due to noise, airborne emissions or liquid discharges.

Airport (AP): Includes all commercial and general aviation airports and accessory uses.

Public/Quasi-Public (P): Includes schools, libraries, fire and police stations, government buildings, public utilities, hospitals, churches, cemeteries and community centers.

Project District (PD): Provides for a flexible and creative planning approach, rather than specific land use designations, and allows for a variety of uses in accord with each individual project district objective.

Future Growth Reserve (FGR): Recognizes possible areas of urban growth that would occur beyond the projected ten year time frame of the community plan update, and encourages planning for infrastructure development and use allocations.

Park (PK): Applies to lands developed or to be developed for recreational use, including public and private active and passive parks. Golf courses are identified as "PK (GC)" in order to differentiate golf courses from other kinds of park uses.

Rural (R): Protects and preserves areas consisting of small farms intermixed with low-density single-family residential lots. The requirements of the State Rural District should govern this area.

Agriculture (AG): Indicates areas for agricultural activity, in keeping with the economic base of the County and the requirements of the State Agricultural District.

Open Space (OS): Intended to limit development on lands that may be inappropriate for intensive development due to environmental, physical or scenic constraints, including shore-line buffer areas, landscape buffers, drainageways, viewplanes, flood plains and tsunami-prone areas.